





territory containing 800,000 inhabitants, and a mining and agricultural district which has few equals in any part of the world. There is already 22 miles built and in operation, with promise of the speedy completion of the whole. As the Magdalena River is the sole natural outlet for the whole of the interior of Colombia, the advantages to be reaped by the connection of its banks with the thickly populated interior by rail communication can readily be understood. The estimated cost of this piece of road is \$30,000 per mile, for which the government grants him a subvention per mile of \$14,300. He has already expended \$1,140,000, and the work is progressing rapidly.

So well satisfied was the government with the initiation of this work that in 1879 it entered into a contract with Mr. Cisneros for the construction of a railroad in the state of Cauca, on the Pacific coast, to run from the seaport of Buenaventura to the city of Cali, 85 miles, with an iron pier in the bay of Buenaventura. There is already 12½ miles of this road built and in operation, as well as the pier referred to, 200 feet long by 20 wide, with a T of 40 feet. The estimated cost is \$48,500 per mile, for which the government grants Mr. Cisneros a subvention of \$28,500 per mile. The population of the interior which this road will directly reach amounts to 600,000, and when the importance of its location is considered, Buenaventura being the controlling seaport on the Pacific coast, the construction of this road must speedily operate to the development of an immense traffic. In the year 1874 the customs at Buenaventura report a business of 2,939 tons of imports, and the exports amounted to 1,879 more. Mr. Cisneros has already expended \$844,000 on this road, and the entire line will be finished in 1886. The revolution of 1876, with its consequences, served to embarrass seriously the operations of Mr. Cisneros, especially in Antioquia, but at the present time tranquility is assured, and with it his success.

The confidence of the Colombian government in the ability of Mr. Cisneros and the importance of his projects was further evinced in the year 1881, when it was resolved to construct a long-talked-of railroad to connect the national capital (Bogota) with the Magdalena River. The route adopted was that approved by Mr. Cisneros (*via* Jirardot), and the government insisted on his taking charge of its construction, they furnishing the entire estimated cost of the first 20 miles, \$447,000. There is already built 8 miles of this portion, and the balance is graded, ready to receive rails. To complete the road to the city of Bogota, 55 miles, there has recently been organized in that city a company with the necessary capital subscribed, and the connection of Bogota by rail and water with the outside world will soon be a thing accomplished.

As a complement of the plan of Mr. Cisneros to develop the connecting links of communication he also obtained a contract from the national government in 1881 for the construction of a railroad on the western bank of the Magdalena River between the upper and the lower river at the head waters of the latter, where the navigation by steamer is both dangerous and uncertain. The length of this road, known as "La Dovada," is to be 30 miles—three of which are already constructed, and have been in operation for the past year. The estimated cost of this line is \$16,000 per mile, subsidized by the government to the amount of \$5,800 per mile, and its construction will prove invaluable to the Colombian people by reason of the delays and losses on the river, now of such common occurrence, which it will serve to avoid.

As the ultimate idea of Mr. Cisneros is that the traffic of Bogota and its surroundings should seek its natural outlet, namely, *via* the Cauca Valley and the Pacific coast, instead of following the Magdalena River to the Atlantic, the extension of the Cauca road to join with that of the Jirardot is alone necessary to accomplish this result, and such an extension will ultimately be made.

Sufficient has been already said to convey to the minds of your enterprising readers an idea of the field which is already opened in the United States of Colombia to American capital and trade.

Mr. Cisneros has evidently worked in the midst of obstacles which few men would overcome, and the result of his labors, shown in the confidence displayed in him by the government, should be a sufficient encouragement to attract the attention of the American merchants and investors to a country so near us and so American in its ideas, whose commerce is to-day almost entirely monopolized in Europe.

## Train Rules.

### XI.

#### ENGINEMEN.

Here, as in previous papers, the rules that have been considered under other heads are merely noted, so as to enable them to be recalled in their proper connection. Many of the locomotive runners' rules are of course the same as the conductors', these two officials being in many respects the joint managers of the train.

There is only one rule (149) that applies exclusively to passenger engine-men, and as it seems more appropriate among cognate subjects (such as Rule 148) than elsewhere, I have placed it so, instead of on a page by itself; the same with the few rules that are for freight runners only.

The ideal plan, though, for arranging engine-men's rules, is that which provides each class with its own rules, entirely free from all irrelevant matter. This involves a good deal of reprinting, of course, and as the writer has already, in these papers, advocated more duplicate printing of rules than will, perhaps, at first thought be regarded by the majority of readers as wise, he has kept more nearly to the ordinary plan. Nevertheless, such rules as 137, 145 and 151 (and 144 and 149 to a less degree) are subject to so

many modifications that they in many cases partake more of the nature of local rules than general, and each engine-man ought to have them locally applied and arranged beforehand, so as to require the least possible study and calculation on his part. There ought to be a separate compilation of rules for each of the following classes of runners, viz.: First-class trains (passenger) running in the day-time; the same, running at night; second-class, day; same, night; third-class, day; same, night; fourth-class (freight), day; same, night; irregular trains of which notice has been given, running by day; same, night; irregular trains running without notice, in the day-time; same, night. Such a manual should combine *general* and *local* rules, and so, in order to set forth the latter concisely, should be gotten up separately for each direction—for the "up line" and the "down line," as the Englishmen say.

Such a work, which might be called a *running plan* would, if carefully made, so as to be a complete guide to the road, require occasional revision, and in this and other ways would throw additional work and responsibility upon the Superintendent; but that is no reason why it should not be adopted. It ought to be arranged graphically, or in map form, so far as possible, and show, among other things, the grades, turnouts, switches, and where to first look for them, signals and their signification, yards, junctions, points where speed must be reduced, explanations of distant lights, which at night may appear confused to the observer, etc., etc. There is a tendency toward such an arrangement of instructions already, in some quarters, and there is ample room for further progress. The tendency might be allowed to become considerably more decided, with good results.

#### TO ENGINEMEN.

123. In the management of a train you must act subject to the orders of the conductor, unless they involve risk; but you must never move a train on the order of a conductor alone; you must be satisfied, independently of him, that you are entitled to the track before obeying his order to move.

124. When there is no conductor you must control the train and the men on it; and you must be sufficiently familiar with the instructions to conductors to do this safely. You are particularly reminded to see that a red rear signal is displayed.

125. You must not permit any person to ride upon your engine, except in conformity to the directions of the Division Superintendent, Superintendent of Motive Power, or some officer higher than these.

126. Notice red and green signals carried on the front of other trains.

127. Responsible for switches turned.

128. Look out for safety of all trains, even though it doesn't seem to be your business to do so.

129. Be on hand at beginning of trip, etc.

130. You must report to the engine dispatcher at the beginning of each trip, and on the arrival at the end of it.

131. Keep engine supplied with lanterns, tools, etc.

132. Carry a watch, etc.

133. Never depend upon one watch alone.

134. Run contrary to rules only on Division Superintendent's orders, etc.

135. \*Whenever you receive an order to run a train in violation of the rules, you must, before acting on it, get the assurance of the person giving it that your understanding of it is correct.

136. See what trains are due before beginning trips.

137. You must look for each switch as soon as you reach the first place where it can be seen from the cab of your engine. Any lack of proper lights discovered when running at night must be reported to the Division Superintendent.

138. Keep to the right-hand track, etc.

139. Keep out of the way of higher class trains.

140 and 141. Trains keep five and ten minutes apart.

142. When you run over a torpedo you must immediately bring your speed under control, expecting to find a train within a mile of it; if no train is found you must keep your speed under control until you have lost five minutes or until you can see far enough ahead to know that you are five minutes behind the preceding train.

143. When pushing a train you must be careful not to run faster than at the rate of ..... miles per hour.

144. When running a train of the third, fourth or fifth class, you must, before entering any station yard, and at all times when running within the limits of a yard, have your speed under complete control.

145. When running a train of the third or fifth class you must never run over any portion of the road at a rate faster than the regular passenger trains usually run over the same portion; and you must never run over any portion faster than the freight trains usually run over the same portion unless you can see half a mile ahead.

146. In running a train of the third or fifth class you must be guided as to speed by Rule 33, subject, however, to the above (Rule 145).

147. On week days, between 6:30 and 7:30 a. m. and between 5:30 and 6:30 p. m., you must, when running without notice, look out for trackmen, one gang on each section. The section masters will look out for regular trains, and all trains for which a flag has been carried, but they will not during these hours look out for any other trains.

148. You must bring your speed under control before reaching a station where a passenger train is likely to be met, except where both your train and the one you expect to meet go through without stopping. And whenever a train is receiving or discharging passengers or a train containing passengers is stopped, you must, if practicable, avoid passing it on the track next to it unless the station agent, conductor or other proper officer signals you that it is safe to proceed. Whenever it may be necessary to disregard this rule a man must be sent ahead to warn passengers. This rule does not relieve you from strict compliance with Rule 144. See also, Rule 149.

149. When two passenger trains approach, at the same time, a station where both are to stop, the train going from ..... must be stopped before reaching the station, and held until the other leaves, or until the station agent signals that it is safe to proceed; and you must govern yourself accordingly.

150. WHEN RUNNING A FREIGHT TRAIN you must keep the rate of speed as near ..... miles an hour as possible,

\* This subject was inadvertently omitted from the conductors' rules.

except when safety requires a lower rate; you are particularly required to govern it at all times when using steam.

[151. When running a freight train you must do switching, etc.]

152. Always and everywhere, with any kind of a train, you must keep your rate of speed low enough so that you can stop within half a mile.

153 (a). You must see that the bell is always rung immediately before starting.

(b). At a point ..... rods before reaching each highway crossing you must see that the bell rings, and that it keeps ringing until the crossing is passed.

(c). You must see that the bell rings at all times when the engine is in motion within ..... rods of a passenger station.

154. At a point ..... rods before reaching each highway crossing you must sound the whistle (one blast of three seconds or less), except that in clear weather it may be omitted in the day-time at crossings where there is a regular flagman or gateman, and in the night at any crossing, provided the headlight shines brightly on the track ahead of the train.

155. You must sound the whistle (at the post set up to indicate the place) on approaching each station.

156. No blast of the whistle should ever exceed three seconds' duration, and every blast should be made as short as the necessities of the case will allow. The whistle must never (except in emergency) be sounded while passing a passenger train, and unless there is imminent danger, it must not be sounded except as above, and to give necessary signals. It must not be used to call switchmen or others.

157 to 163, inclusive. Rules for single track, same as conductors' rules on same subject.

Rule 125 is frequently, or perhaps generally, made to state specifically what persons may be allowed to ride upon locomotives; but as the subject is one which generally, perhaps always, can be more satisfactorily treated in a separate circular, the form here shown seems better adapted to the purposes of a general rule.

The officer who is immediately superior to the locomotive runners has various titles, and Rule 130 must conform to the prevailing local fashions; the term here used is that in vogue on the Manhattan Elevated road.

Where trips end at way stations this rule has to be modified, or else some person authorized to act nominally as engine dispatcher.

The rights of hand-cars are quite frequently left at loose ends, so that the section-masters take more liberties than they ought to, and where these rights are defined they are often abridged to such very small proportions that they are as frequently violated as in the other case, though whether or not this is a result of the stringency of the rule I will not say. No road can nowadays afford to bind itself never to run a train without notice, and on the other hand it is not fair to compel the section-master always to have a flag out both ways. The rule (147) as here written assumes that the gangs of trackmen begin work at seven in the morning and finish at six in the evening.

Rule 148 is useful chiefly on double track roads, where it is desirable to obviate all possibility of danger to careless persons alighting from the cars, either on the side next to the station or otherwise; but as this protection is equally desirable under any circumstances where trains are liable to run alongside one another, there is no propriety in restricting the rule to the double-track line. It would, perhaps, be desirable to head both 148 and 149 as "Rules for the protection of passengers alighting from trains."

Rule 154 is similar to that in force on a prominent New England road, which has some regard for the feelings of the nervous people residing near its line, and it is to be hoped that the fashion (of keeping more quiet) will be more widely followed. Such a large proportion of Yankees are excessively nervous (which is a polite term for the old-fashioned phrase "cross, kinky and irritable") that public opinion is gradually but surely tending to the point where every road will be required to muzzle its whistle as well as its pop valves to the fullest possible extent. Whistles are now made so large, in order to insure their effectiveness as danger signals, that the volume of noise is more offensive than its duration, in many cases, and heedless runners will have to be reminded to take pattern after their more skillful brethren, who moderate the force of the blast when there is no emergency requiring its full strength. The practice of indulging in from one to four outlandish and ear-splitting shrieks at every crossing in cities and villages "must go."

## THE SCRAP HEAP.

### Locomotive Building.

The Boston & Albany shops in Springfield, Mass., are building two very heavy passenger engines, to be run on the New York-Boston fast express trains.

The Brooks Locomotive Works in Dunkirk, N. Y., are building 10 new passenger engines for the New York, Lake Erie & Western road.

The Cleveland, Columbus, Cincinnati & Indianapolis shops in Cleveland, O., and Brightwood, Ind., are building several new mogul engines with 18 by 24 in. cylinders. These engines will all have the extended smoke-arch.

The New York Locomotive Works in Rome, N. Y., have executed a mortgage to the Central Trust Co., of New York, to secure an issue of \$150,000 bonds bearing 6 per cent. interest and having 10 years to run from Aug. 1 next.

The Baldwin Locomotive Works in Philadelphia are building two narrow-gauge passenger engines for the Maryland Central road.

The Canadian Locomotive Works in Kingston, Ont., have taken a contract to build 7 passenger engines for the Intercolonial road. They will have 18 by 24 in. cylinders and 5 ft. 9 in. drivers.

### Car Notes.

The Maine & New Brunswick Potato Car Co. is having 300 cars built, provided with a patent heating arrangement. They are to be used to carry potatoes, etc., from New Brunswick and Maine during the winter.

The Rochester Car Wheel Works in Rochester, N. Y., re-



port business exceedingly good. They are turning out about 100 wheels per day.

The Oehl Stock Car Co. has been organized at Monongahela City, Pa., to build stock cars under the Oehl patent. The Central Pacific shops in Sacramento, Cal., are building a number of refrigerator cars for the road.

The Boston & Albany shops in Allston, Mass., have just completed four new passenger cars for the road. They are similar in design and construction to the cars lately built and described a few months ago. They are mounted on 42-in. paper wheels.

The car shops of Osgood Bradley in Worcester, Mass., have just completed five new passenger cars for the Boston & Maine road. They are mounted on paper wheels, which will be the first wheels of the kind to run on this road.

#### Iron Notes.

Victoria Furnace, at Goshen Bridge, Va., is now making pig iron from Virginia ores, with coke as fuel, at the rate of 85,000 tons a year. E. L. Harper & Co., of Cincinnati, are agents for the furnace.

The Minerva Furnace Co., of Milwaukee, Wis., has leased its furnace to a company which proposes to build a rolling mill in connection with it.

The Alabama Mineral Land Co., a new corporation, has made arrangements to buy all the lands formerly owned by the Selma, Rome & Dalton Co. in Alabama, and will soon put large tracts of coal and iron lands on the market.

The Fowler Rolling Mill in Chicago has recently been enlarged by a new train of rolls and other machinery.

It is proposed to build a rolling mill and pipe mill at Kewanee, Ill., provided the people of the place will give the land.

The works of the North Chicago Rolling Mill Co. in South Chicago have shut down for repairs.

The Shumway & Burgess Bolt Co. in Chicago has increased its capital stock to \$30,000.

The Cambria Iron Co. at Johnstown, Pa., has its steel rail mill crowded with work, and some heavy orders to fill. The Union Switch & Signal Co., of Pittsburgh, is now putting its system of interlocking signals and switches in the Grand Central Depot yard of the New York Central & Hudson River road in New York. The signal system will extend from the yard to the bridge over the Harlem River.

Coosa Furnace, at Gadsden, Ala., is making iron from high-grade red hematite ores mined in the vicinity, using coke as fuel. E. L. Harper & Co., of Cincinnati, are agents for the furnace.

#### Manufacturing Notes.

The Pennsylvania Steel Co. at Steelton, Pa., has provided new and very extensive shops, and enlarged facilities by which it has greatly increased the capacity to manufacture railroad frogs, switches, etc., and from July 2 that branch of their business is conducted as a separate and distinct department, to be known as "The Frog, Switch and Signal Department," under the superintendence of Mr. Geo. W. Parsons. This department will manufacture a great variety of railroad frogs, switches, crossings and switch stands, also interlocking signal and switch apparatus.

The firm of D. W. C. Carroll & Co., owners of the Fort Pitt Works in Pittsburgh, was dissolved June 7. The affairs of the firm are settled by D. W. C. Carroll, who will continue the business of manufacturing boiler plate and steam boilers at the works.

The Standard Manufacturing Co. has been organized at Fort Wayne, Ind., with \$500,000 capital stock, for the purpose of manufacturing the Curtice patent brake shoe.

The Washburn & Moen Manufacturing Co. in Worcester, Mass., is supplying the barbed wire fencing for the New York, West Shore & Buffalo road.

#### An Electric Light Car.

An exchange says that the Cumberland Valley Railroad Co., which does a considerable business in carrying picnic parties to points on its line, has devised a new attraction in the form of a car provided with machinery for supplying electric light to such parties as may wish to remain on the picnic grounds after dark. The car is said to be in demand.

#### An Electric Railroad in Cleveland.

Several gentlemen who have been projecting an elevated railway to the East End of Cleveland, O., says the *Leader*, of that city, have "conceived the idea of constructing an electrical railway. The proposition was favorably received by a number of capitalists, and steps were at once taken to ascertain the feasibility of the project. A gentleman was sent to Chicago to inspect the workings of the electric motor on exhibition at the railway exposition, and another went to New York and investigated the operations of the Edison Electric Railway near that city. Both made very flattering reports, and the result will be the organization of a company to build the road in this city. It is probable that the road will not be built in the streets at all, but upon ground appropriated for the purpose. Cars propelled by electricity run very rapidly, and if the road were built through public streets there would doubtless be many serious and fatal accidents. The route, which will be selected within a few days, will probably extend from a point near the intersection of Payne avenue and Superior street, in almost a straight line, to Doan's Corners. Most of the territory through which the road will pass is unoccupied by dwellings, and the right of way, it is thought, can be secured at very reasonable prices. It is probable that the motor in use on the Vienna road will be adopted here. We hope to attain a speed almost equal to that of cars run by steam, and the trip from Doan's Corners to the square can easily be made in 20 minutes, including stops at stations along the route."

#### A Confusion of Names.

The St. Louis *Republican* thus speaks of what is a common difficulty on new roads in the West and Southwest:

"Some of the towns along the Texas & St. Louis Railway are known by so many different names that the company, the postal department and the traveling public are often subjected to aggravating annoyances. There is, for instance, a town on the road which the railway officials know as Red Land. The post-office name of the town is Pohasset. All persons who have occasion to write to the citizens of Red Land find it necessary, if they desire to have the letters reach their destination, to address them to Pohasset. Not fancying either the name of Red Land or Pohasset, the people of the place have named the town Kingston. A new element recently came to the front with a proposition to have the town rechristened as soon as possible. They held a consultation with the railway company, in order that a name might be selected upon which all the conflicting elements might agree. They thought that Kingston was a poor name for any town, and that Red Land was still worse. So far as the name Pohasset was concerned, no one ever thought of calling the place Pohasset except government officials and strangers ignorant of the town's real name. It was finally agreed by the railroad company and the citizens of Pohasset, Kingston or Red Land that the place should discard all its aliases and be

known in the future as King's Land. Accordingly a petition petition was sent to the post-office department at Washington, requesting that the name of the Pohasset post-office be changed to the King's Land post-office. They have received no answer to the petition yet, but they feel confident that the government will take the proper action in the matter as soon as possible. While the government is deliberating on the subject, the railway company will defer the printing of their tickets to the point in question.

"It appears that Red Land is not the only town on the road that has several names. Quite frequently the conductors who run passenger trains over the line, complain that they are bothered, because some of their stations are known by several different names. Not long since a man thought he would establish a new town. He had a sign-board painted and put up near the railroad track, announcing that the place was such and such a station. This was a surprise to the railroad company, as they were not aware that any new stations had been established. It can be seen that such freaks on the part of the eccentric countrymen who live along the Texas & St. Louis road are calculated to cause no small amount of confusion—especially if stations are established without the company's knowledge."

#### Fast Time 30 Years Ago.

An old conductor gives the Rochester (N. Y.) *Post-Express* the following statements about a special train which was run from Albany to Niagara Falls and back with the New York Legislature on board, over what is now the New York Central, in June, 1853:

"We have had numerous discussions regarding the time made on the Falls and Buffalo lines by the Legislature train. Here, you see, we have the official data, and I think we had better copy freely from it. The trip was made June 4, 1853. It left Albany at 6 a. m., arrived at Utica at 8:34; Syracuse, 10:07; Rochester, 12:30 p. m., and Niagara Falls, 2:30 p. m. The time-table for the occasion made the arriving time at the Falls 1:15 p. m. The return trip was by the way of Buffalo. Here is the official time:

	Time.
Albany & Rochester road, 3 passenger cars, 60 miles.....	1 23
R. L. & N. F. road, 5 passenger cars, 76 miles.....	1 45
Rochester & Syracuse road, 5 passenger cars, 81 miles.....	2 15
Syracuse & Utica road, 5 passenger cars, 53 miles.....	1 13
Utica & Schenectady road, 5 passenger cars, 72 miles.....	1 52
Schenectady & Albany road, 5 passenger cars, 17 miles.....	0 25

"You see that the time fixed for the trip was 7 hours and 15 minutes, while the actual time made was 8 hours and 30 minutes. Fifteen minutes were consumed in stops from Albany to the Falls on the up trip. At Buffalo the newspaper men and merchants kept aloof from the train. They were not in favor of railroads in those days, for the reason that it was feared that they would supersede the canals, and thus ruin the city. How different now! Every encouragement is given railroads to enter the city and they make the Queen City of the Lakes the great railroad centre of the country."

#### Asleep on an Engine.

English papers relate how the signalman of Llandudno saved the Irish mail passengers from what might have proved a terrible fate. The signalman at the junction received a message from the signalman at Conway, the next station toward Holyhead, that a light engine was coming. The junction signalman, knowing that the Irish mail was due, decided to run the engine into a siding in order to permit the express to pass. He accordingly put up all the signals against the light engine, but to his extreme astonishment the engine came straight into the junction at full speed, swept round the corner, dashing past all the danger signals and disappeared from view down the line toward Chester. A moment's reflection convinced the signalman that both driver and stoker must be asleep. He accordingly wired to the Colwyn Bay station signalman: "Engine coming; driver-asleep; put fog signals on line." The man at Colwyn Bay was equally prompt, for, running out of his box, he had hardly time to lay a number of signals when the engine came thundering along and an explosion followed which effectually awoke the men. The engine was stopped and run back into a siding, when it was discovered that the fire had gone out, that the water had disappeared from the boiler and that the men had been asleep some time. Inquiry resulted in their immediate discharge. They had been 15 hours on duty.

#### A Railroad in Palestine.

The first railroad in Palestine is being laid out, and the preliminary survey has been completed far as the Jordan. It is to run between Acre and Damascus, and it is called the Hamidieh line, because it is named after his present majesty the Sultan Abdul Hamid, and probably one reason why the firman has been granted so easily lies in the fact that it passes through a great extent of property which he has recently acquired to the east of the plain of Esdraelon. The concession is held by 10 or 12 gentlemen, some of whom are Moslems and some Christians, but all are Ottoman subjects resident in Syria. Among the most influential are the Messrs. Sursock, bankers, who own the greater part of the plain of Esdraelon, and who have, therefore, a large interest in the success of the line. Starting from Acre, it will follow the curve of the bay for 10 miles, in a southerly direction, at a distance of about 20 miles from the beach. Crossing the Kishon by a 60 ft. bridge, it will turn east at the junction of a short branch line, two miles long, at Haifa. Hugging the foot of the Carmel range, so as to avoid the Kishon marshes, it will pass through the gorge which separates that mountain from the lower ranges of the Galilee hills, and debouch into the plain of Esdraelon. This plain it will traverse in its entire length. The station for Nazareth will be distant about 12 miles from that town; there may, however, be a short branch to the foot of the hills. So far, there has only been a rise from the sea level in 20 miles of 210 ft., so that the grade is imperceptible. It now crosses the water-shed and commences to descend across the plains of Jezreel to the valley of the Jordan. Here the Wady Jalud offers an easy incline as far as Beisan, the ancient Bethshan, and every mile of the country it has traversed so far is private property, and fairly cultivated. At Beisan it enters upon a region which has, partly owing to malaria and partly to its insecurity, been abandoned to the Arabs, but it is the track of all others which the passage of a railway is likely to transfigure, for the abundance of the water, which is now allowed to stagnate in marshes, and which causes its unhealthiness, is destined to attract attention to its great fertility and natural advantages, which would, with proper drainage, render it the most profitable region in Palestine. Owing to the elevation of the springs, which send their copious streams across the site of Beisan, the rich plain which descends to the Jordan, 500 ft. below, can be abundantly irrigated. There is a little bit of engineering required to carry the line down to the valley of the Jordan, here 800 ft. below the level of the sea, which it then followed north as far as the Djisr el Medjameh. Near this ancient Roman bridge of three arches, which is used to this day by the caravans of camels which bring the produce of the Hauran to the coast, the new railway bridge will cross the Jordan, probably the only one in the world which will have for its neighbor an

actual bridge in use which was built by the Romans, thus in this now semi-barbarous country, bringing into close contact an ancient and a modern civilization. After crossing the Jordan, the line will still follow the banks of that river to its junction with the Yarmuk, which it will also cross, and then traverse a fertile plain of rich alluvium, about five miles long and four wide, to the banks of the ridge which overlooks the eastern margin of the Sea of Tiberias. It is the extent to which the survey has been completed. It is not decided whether to rise from the valley by the shoulder of the ridge which overlooks the Yarmuk, or to follow the east shore of the Lake of Tiberias to the Wady Sema, which offers great advantages for a grade by which to ascend nearly 3,000 ft. in about 15 miles. This is the toughest bit of engineering on the line, and is in close proximity to the steep place down which the swine possessed by devils are said to have rushed into the sea. Once on the plateau it will traverse the magnificent pasture lands of Jaulan and the grain growing country of Hauran, with probably a short branch to Mezrib, which is the principal grain emporium, and one of the most important halting-places on the great pilgrimage road from Damascus to Mecca. It is calculated that the transport of grain alone from this region to the coast will suffice to pay a large dividend upon the capital required for the construction of the road, which will be about 130 miles in length. The grantees have also secured the right to put steam tugs upon the Lake of Tiberias, and under the influence of this new means of transportation, the desolate shores will undergo transformation.—*Boston Advertiser*.

#### An Elephant at the Brakes.

One of the most singular and for a time perplexing events known in the annals of railroad, occurred repeatedly on Erie train No. 3, which passed west through Elmira on time Tuesday morning, but reached Hornellsville an hour late. Shortly after leaving Elmira the train was brought to a sudden stop with such a jerk as to arouse every sleeping passenger from his morning slumbers. The engineer and conductor conferred together. They found themselves at a loss to account for the pulling of the air-brakes and the stoppage of the train. Extra train No. 3 was only 20 minutes behind them, so they had to send a brakeman back to flag and prevent a tail collision while they waited to investigate. Nothing could be found to indicate why or by whom the train had been stopped, so she soon proceeded west.

The engineer let the iron horse have the reins, and the train sped away at a rapid rate to make up some of the lost time. After only a short run the train was brought to a more sudden and inexplicable halt than before. The remaining brakeman went back and set another flag to warn extra train No. 3; another short but wholly unsatisfactory investigation was held, and again the train was fairly let loose, to run like the wind.

When the train pulled into Hornellsville, with the conductor guarding the rear platform and men stationed between each of the other cars, she was an hour late, as above stated.

During the halt at Hornellsville, while one of the car inspectors was sounding the wheels, low and behold! the air-brakes were again turned on, with that distinctly audible and unmistakable "sizz" which means business. Everybody had been on the lookout, and nobody in the passenger cars had touched the air-brake ropes which run through each of them, to be pulled only in case of extreme danger.

Here was a quandary indeed, for the trainmen. A moment's conference decided them. They opened a sealed express car to investigate. In this car was a baby elephant consigned to a Chicago showman. Undisturbed by the curious eyes that peered in upon him, his Oriental highness was still pulling away with his trunk at the rope attached to the air-brakes and running along through the side of his car in common with the others.

It is safe to say that this is the first case on record in which an elephant has stopped a train of cars in this scientific manner.

The trainmen, after their discovery, simply removed the brake-rope from the express car and the train was neither stopped nor delayed again on its way to Buffalo.—*Port Jervis Gazette*, July 11.

#### ANNUAL REPORTS.

The following is an index to the annual reports of railroad companies which have been reviewed in previous numbers of the present volume of the *Railroad Gazette*:

Page.	Page.
Atchafalaya, Topeka & Santa Fe, 246	Manchester & Lawrence..... 306
Atlantic & Pacific..... 340	Manhattan..... 181
Augusta & Knoxville..... 350	Mexican Railway..... 361
Baltimore & Annapolis..... 427	Michigan Central..... 278, 280
Baltimore & Potomac..... 213	Milwaukee, Lake Shore & West..... 395
Baltimore & Pennsylvania..... 213	Missouri, Kansas & Texas..... 231
Boston, Barre & Gardner..... 73	Missouri Pacific..... 167, 230
Boston, Concord & Montreal..... 356	Morris & Essex..... 407
Boston & Lowell..... 23	Natchez, Jackson & Col..... 196
Boston, Revere Beach & Lynn..... 100	New Haven & Northampton..... 7
Bur. Cedar Rapids & No..... 232	New London Northern..... 128
Canada Atlantic..... 179	N. Y. Cen. & Hudson River..... 7, 8
Canada Southern..... 360	N. Y. New Haven & Hartford..... 22
Canadian Government Roads..... 313	N. Y. Ontario & Western..... 197
Central Branch..... 231	N. Y. Penn. & Ohio..... 213, 214
Central Iowa..... 306	N. Y. Susquehanna & Western..... 356
Central of New Jersey..... 312	Norfolk & Western..... 180
Central Pacific..... 103	Northern Central..... 123
Charlotte, Col. & Augusta..... 23	Northern New Hampshire..... 340
Chesapeake & Ohio..... 138	Odenburg & L. Champlain..... 407
Chicago & Alton..... 122, 142	Ohio & Mississippi..... 105
Chicago, Bur. & Quincy, 7, 191, 230	Oregon Improvement Co..... 278
Chl. Mil. & St. Paul, 73, 167, 263, 265	Panama..... 231
Chl. Rock Island & Pacific, 340, 443	Pennsylvania & N. Y..... 73
Cincinnati & Eastern..... 463	Pennsylvania Railroad..... 150, 154
Cincinnati, Ham. & Dayton..... 463	Philadelphia & Reading..... 22
Cincinnati, N. O. & Tex. Pac., 39, 345	Phila. Wil. & Baltimore..... 133
Cleve. Col. Cln. & Ind..... 181, 183	Pittsburgh, Cln. & St. Louis..... 312
Cleveland & Pittsburgh..... 39	Pittsburgh, Ft. Wayne & Chl..... 340
Columbia & Greenville..... 59	Pittsburgh & Lake Erie..... 40
Concord..... 306	Portland & Odenburg..... 100
Connecticut River..... 115	Portland & Rochester..... 100
Delaware & Hudson Canal, 100, 122	Providence & Worcester..... 104
Delaware, Lacka. & Western..... 122	Rochester & Pittsburgh..... 41
Del. Lac. & W. Leased Lines..... 407	St. Louis, Iron Mt. & So..... 167, 231
Des Moines & Fort Dodge..... 362	St. Louis & San Francisco..... 197
Denver & Rio Grande..... 363	St. L. Vandalia & Terre Haute..... 246
European & North American..... 23	St. Paul & Duluth..... 104
Fitchburg..... 40	Savannah, Florida & West..... 312
Int. & Pere Marquette..... 262	St. Paul & Northern Pacific..... 213
Georgia Central..... 312	South Carolina..... 90, 121
Grand Trunk..... 50, 239	Sullivan County..... 427
Hannibal & St. Joseph..... 163	Sussex..... 407
Hanover Junc. Han. & Gettysb..... 353	Terre Haute & Indianapolis..... 407
Hartford & Conn. Western..... 7	Texas & Pacific..... 231
Housatonic..... 196	Union Pacific..... 164
Houston & Texas Central..... 39	Utah Central..... 246
Huntington & Broad Top..... 121	Valley, of Ohio..... 290
Illinois Central..... 167, 180, 182	Vermont Valley..... 427
Indiana, Bloom. & Western..... 463	Virginia Midland..... 100
International & Great No..... 231	Wabash, St. Louis & Pac..... 167, 180
Kentucky Central..... 246	Warren..... 407
Lake Shore & Mich. So., 228, 306	Western R. R. Association..... 37
Lehigh Coal & Navigation Co., 138	West Va. Central & Pittsburgh..... 213
Lehigh Valley..... 73	Woodstock..... 100
Little Rock & Ft. Smith..... 278	Worcester & Nashua..... 40
Long Island..... 73	York & Peachbottom..... 355
Maine Central..... 21	

#### St. Joseph & Western.

This company owns a line from St. Joseph, Mo., to Grand Island, Neb., 252 miles. It is controlled and worked by the Union Pacific Co. The following statements have been published for the year 1882:

The stock of the company is \$4,100,000, the bonded debt







Assets.	
Construction.....	\$137,963,157 88
Construction Cal. & Oregon Extension.....	390,397 41
Equipment.....	8,224,701 49
Shops.....	1,189,870 00
Machinery in shops.....	764,369 25
Real estate.....	1,556,522 07
Steamer Division property.....	672,020 46
New ferry boat.....	9,967 60
Furniture, telegraph instruments, safes, etc.....	155,772 04
Sinking funds.....	5,844,419 17
United States transportation and sinking fund accounts.....	7,915,941 71
Material in shops.....	\$859,837 10
" in store.....	82,627 71
" for track.....	1,248,600 81
" for bridges and buildings.....	703,693 55
" for turn-tables.....	7,987 75
Fuel.....	2,902,746 92
Stocks and bonds.....	1,189,236 06
Bills receivable.....	253,120 83
Accounts receivable.....	840,665 46
Cash.....	582,478 40
Total.....	\$170,976,236 71

The report says of the government bonds: "The interest accrued upon these bonds issued to the Central and Western Pacific Railroad companies amounted at that date (Dec. 31, 1882) to \$28,285,133.81; of which \$7,915,041.71 had been repaid by transportation, cash, and U. S. sinking fund. The balance, \$16,369,192.10, is not due and payable by the company until the maturity of the principal of the bonds (average July 1, 1898); the sum of \$6,631,351.23 invested at 6 per cent. interest would suffice to liquidate this balance at maturity; and this latter sum, rather than the nominal balance, represents the true burden of this item of interest advanced by the United States, and not reimbursed by services," etc.

The funded debt consists of \$1,500,000 California state aid bonds, the interest on which is paid by the state; \$25,883,000 first-mortgage bonds; \$111,000 Western Pacific aid bonds; \$2,624,000 Western Pacific first-mortgage bonds; \$6,000,000 California & Oregon Division bonds; \$687,000 San Francisco, Oakland & Alameda bonds; \$6,080,000 San Joaquin Valley bonds; \$5,949,000 land grant bonds and \$3,285,000 income bonds. The interest charge (not including the state aid bonds) is \$3,241,380 yearly.

The sinking funds of the company include \$5,955,000 invested in bonds, of which amount first-mortgage bonds of the Southern Pacific Railroad Co. of California constitute \$4,271,000, and first-mortgage bonds of the Southern Pacific Railroad Co. of Arizona, \$980,000; the cash on hand was \$916,519, since invested, presumably in the same sort of bonds. This is the first definite statement showing the class of bonds held in the sinking funds, and it now accounts for about \$6,167,000 of the Southern Pacific loans which have not been publicly marketed.

## TRAFFIC.

The train mileage for the year was as follows:

	1882.	1883.	Increase.	P. c.
Passenger.....	3,022,368	2,706,780	315,588	11.7
Freight.....	7,079,604	5,797,758	1,281,846	22.1
Service.....	1,025,134	767,274	257,860	33.6
Switching.....	1,542,870	1,175,244	337,626	28.7
Total.....	12,630,976	10,447,056	2,182,920	21.0
Cost per mile run.....	33.69cts.	32.57cts.	1.12cts.	3.4

The high cost of locomotive service is due chiefly to the great cost of fuel, the average last year being \$7.78 per ton for coal, and \$4.64 per cord for wood.

The mileage and cost of maintenance of cars was as follows:

	1882.	1883.	Increase.	P. c.
Sleeping cars.....	2,670,928	2,407,016	\$112,847	\$55,226
Passenger cars.....	7,004,543	6,847,818	131,25	120,564
Baggage, mail and express cars.....	5,999,329	4,829,905	38,842	42,612
Second class and smoking cars.....	3,931,172	3,361,140	26,296	26,312
Officers' cars.....	175,283	198,607	10,701	8,935
Freight cars.....	105,326,338	84,718,751	598,062	375,810
Miscellaneous cars.....			4,281	15,594
C. P. cars on for roads.....	9,952,569	6,375,707		
Foreign cars.....	14,105,968	10,849,103	24,222	21,854
Total.....	149,166,130	119,588,047	\$946,502	\$666,917

The increase in mileage was 29,578,083 miles, or 24.7 per cent.; the increase in the cost of maintenance was \$279,586, or 41.9 per cent.

The passenger traffic was as follows:

	1882.	1883.	Increase.	P. c.
Passengers carried.....	95,226	77,908	17,328	22.1
Through.....	1,098,129	1,507,318	190,811	12.7
Local.....	5,895,159	5,447,050	448,109	8.2
Ferry.....				
Total.....	7,988,514	7,032,366	656,148	9.3

The ferry passengers are those between San Francisco and Oakland, who are carried from two to six miles in the cars, besides the ferry trip.

The freight traffic was as follows:

	1882.	1883.	Increase.	P. c.
Tons carried.....	2,432,030	2,172,041	259,989	11.9
Commercial freight.....	877,666	565,133	112,533	19.9
Company's freight.....	3,100,696	2,737,174	372,522	13.6
Ton-miles:				
Commercial freight.....	790,166,547	632,932,747	157,233,800	24.8
Company's freight.....	112,831,389	100,423,134	12,411,255	12.4
Total.....	902,997,936	733,355,881	169,642,055	23.1

Of the tons of commercial freight carried last year 390,000, or 16 per cent., were through, and 2,042,030 tons, or 84 per cent., were local freight. The local freight included 577,962 tons of grain carried to market, the grain traffic showing a decrease of 4.1 per cent. in tonnage and of 9.5 per cent. in earnings. In spite of this decrease in grain the local freight traffic showed an increase of 9.6 per cent. in tons carried, and of 12.5 per cent. in ton miles.

## EARNINGS.

The earnings of the road for the year were as follows:

	1882.	1883.	Inc. or Dec.	P. c.
Freight.....	\$16,302,883	\$15,842,139	\$460,744	2.9
Passengers.....	7,474,216	6,992,828	1,781,388	11.7
Mail and express.....	963,467	775,190	1,887,277	24.0
Miscellaneous.....	922,191	783,944	1,338,247	17.6
Total.....	\$25,662,757	\$24,094,101	\$1,568,656	6.5
Expenses.....	16,067,184	13,839,307	2,207,877	15.9
Net earnings.....	\$9,595,573	\$10,254,794	\$659,221	6.9
Gross earn. per mile.....	8.437	8.901	464	5.2
Net earn. per mile.....	3.155	3.781	626	16.5
Per cent. of exps.....	62.60	57.52	5.08	...

The decrease in net earnings, it will be seen, was entirely

due to the large increase in working expenses last year, from various causes.

The income statement is as follows:

Net earnings from roads.....	\$9,595,573 45
" river steamers.....	20,485 29
Interest on sinking funds.....	281,260 00
Cash from land sales used to redeem bonds.....	711,000 00
Total.....	\$10,608,318 74
General and legal expenses.....	\$586,577 56
Taxes paid.....	448,005 60
Interest.....	3,443,413 32
Land bonds redeemed.....	711,000 00
Paid into sinking funds.....	1,034,760 00
United States, interest and sinking fund.....	792,920 24
	7,016,076 81

Balance available for dividends.....	\$3,591,641 93
Dividends, 6 per cent.....	3,556,530 00
Balance, surplus.....	\$35,111 93

The report having been issued earlier than usual, does not give a statement for the first six months of the current year as previous reports have done.

## LEASED LINES.

The report gives for the first time a statement showing the earnings and rental of all the leased lines and the profit or loss resulting to the company from their operations; it is as follows:

	Gross earnings.	Operating expenses.	Amount of rental.	Net profit or loss.
Gen. Pac.....	\$13,712,201	\$6,135,917	\$55,812	P. \$7,520,472
S. P. of Cal.....	4,025,360	2,119,944	1,666,666	P. 238,749
S. P. of Ariz.....	2,718,298	1,197,290	634,356	P. 886,652
Mexico.....	789,753	414,213	285,638	P. 80,901
Gal. Har. & S. Antonio.....	394,358	463,008	241,859	L. 320,507
Sacramento & Placerv.....	23,981	10,359	7,200	P. 6,423
Los Angeles & In.....	26,936	18,831	20,196	L. 12,092
N. Railway.....	1,737,343	719,244	423,152	P. 594,946
Los Angeles & S. Diego.....	72,128	31,159	33,384	P. 7,585
Cal. Pacific.....	1,356,709	506,926	600,000	P. 250,683
Stockton & C. P. opolis.....	115,765	51,739	25,000	P. 39,026
San Pablo & Tulare.....	652,973	172,819	167,465	P. 312,689
Amador Bh.....	46,954	23,908	42,000	L. 18,954
Totals.....	\$25,662,757	\$11,864,456	\$4,202,728	P. \$9,595,573

The terms of the leases are also given, as follows, making a very interesting statement:

Name of company.	Miles of road.	Expiration of lease.	Terms of lease.
Southern Pacific (Cal.).....	80.23	Jan. 1, 1885	\$250 per mile per month.
".....	24.24		\$125 per mile per month.
Southern Pacific (Ariz.).....	384.17	Nov. 1, 1885	\$135 p. m. per mo. & tax.
Southern Pacific (N. M.).....	167.22	Nov. 1, 1885	\$135 p. m. per mo. & tax.
Pacific Improvement Co.....	38	Current.	\$2,000 per month.
Galv. Har. & San An.....	361.81	Feb. 1, 1883	\$83.83 per mile per mo.
Los Angeles & San D.....	27.69	Nov. 1, 1885	\$100 p. m. per mo. & tax.
Los A. & Independence.....	16.83	Nov. 1, 1885	\$100 p. m. per mo. & tax.
Stockton & Copperopol's.....	49.60	Jan. 1, 1905	The principal and int. on \$50,000 30-year bonds at 5 p. c. Net earnings to apply on floating debt S. & C. P. R.
Amador Branch.....	27.20	Nov. 1, 1890	\$5,500 per mo. and taxes.
Berkeley Branch.....	3.84	Nov. 1, 1890	\$768 per month & taxes.
California Pacific.....	115.44	July 1, 1905	\$60,000 per annum.
Northern Railway.....	117.14	Jan. 1, 1885	\$47,500 per month, including San Pablo & Tulare R. R. leased.
San Pablo & Tulare.....	36.49	Current.	\$5,250 per month.
Sacramento & Placerv.....	46.51	Jan. 1, 1885	Int. in lease of North'n
Union Pacific.....	5.00	June 30, 1874	\$600 per month. Same rate per mile as earned by U. P. R. R. on its road.

The portion of the Galveston, Harrisburg & San Antonio Railway operated by this company under lease in 1882 was from El Paso, Texas, eastward, as constructed. Upon the connection of this portion of the road with the remainder of the Galveston, Harrisburg & San Antonio Railway system, which occurred on Feb. 1, 1883, this lease was canceled.

## GOVERNMENT SINKING FUNDS.

The report says: "The amounts as found due by the United States Commissioner of Railroads, under the various Acts of Congress, have been promptly paid into the United States Treasury. The following shows the condition of these accounts on Dec. 31, 1882:

Amount of company's accounts against the United States Government, as shown in last annual report on Dec. 31, 1881.....	\$6,746,668
Amount of cash paid the United States in 1882, on account of requirement for 1881.....	79,150
Amount of transportation performed for the United States in 1882, freight, passengers and mails.....	1,090,123
Total to Dec. 31, 1882, as shown in balance sheet.....	\$7,915,941

"The total amount required to be paid the United States from the earnings of 1882, from that portion of the road aided in its construction by a loan of United States bonds, is \$792,920. As is shown above, this amount has been more than met by the United States transportation performed over the various roads operated by this company. The application of the amount required for the year is as follows:

To the credit of the U. S. bonds and interest.....	\$360,778
To the credit of the sinking fund of the Co. in the U. S. Treasury.....	432,142
Total.....	\$792,920

"The United States Treasury Department has heretofore interpreted the act of May 7, 1878 (Sinking Fund Act), so that payments on amounts due this company for transportation performed for the government should be withheld on all lines leased and operated, whether or not they received aid in their construction from the United States.

"It is a matter of congratulation that this interpretation of the law has been finally changed, so that payment shall be withheld for United States transportation on that portion of the road only (from San José to Ogden, 860.66 miles) which was aided in its construction by a loan of United States bonds. Amounts due on other portions of the road owned or leased will be paid by the United States in cash.

"The stockholders are also to be congratulated upon the decision of the United States Supreme Court in the case of the Union Pacific Railroad Co. against the United States (Otto XIV., p. 682), that the sixth section of the Pacific Railroad Act of 1862 (12 Stat., 489) constitutes a contract between the United States and the railroad company, whereunder the latter is entitled to compensation for the transportation on its road of the United States mails, and the agents and clerks employed in connection therewith, at fair and reasonable rates, not to exceed those paid by private parties for the same kind of service. This case also decides that the legislation embraced in Sections 3997-4005 inclusive, of the Revised Statutes, regulating the rates for

railway postal service, does not apply to that portion of this company's road between San José and Ogden.

"This is in accordance with the position always maintained by this company; and as the company receives more from private parties for the same kind of service as that performed in transporting the United States mails, than has been allowed by the Post-Office Department, it has a considerable claim for back amounts due as well as for an increase of the current rates. What shall be considered a like service, and a fair and reasonable rate, will be decided in due course by the Court of Claims."

## GENERAL REMARKS.

"During the year 1882 there were 276 freight cars completely rebuilt, which had been worn out in service or had been badly damaged from time to time. Locomotives, during the year, also received extraordinary repairs to the amount of \$293,988.87. On the lines owned by this company there were 134.93 miles of track, or 268.72 miles of iron rail relaid with steel, and there were 286,434 old ties replaced by new ones during 1882. All of the above items for renewal have been charged to operating expenses, and paid out of the income for the year.

"By reference to table elsewhere in the report, it will be seen that the extension of the Galveston, Harrisburg & San Antonio Railway eastward from El Paso, Texas, was operated during the year at a loss to this company of \$320,507.48. This road was operated under a provisional lease during the process of construction, and upon the connection of this portion of the road with the remainder of the Galveston, Harrisburg & San Antonio Railway system, on Feb. 1, 1883, the lease was cancelled.

"The opening of this new route to Galveston and New Orleans, it is anticipated, will add to the earnings of the lines leased by this company, without impairing the earnings of the lines owned, the increase being largely new business from new territories.

"In the month of May, 1883, a junction was made at Ogden, Utah, with the Denver & Rio Grande Railway, thus making a new and important connection, and bringing new business to the road owned by this company.

"The apprehension which seems to have been felt by some stockholders that the completion of other transcontinental lines may in time seriously affect the earnings of the lines owned by this company, does not appear to your directors to be well founded. The permanent strength possessed by this company's lines from their local sources, without the additional strength which they receive from their position as through lines across the continent, is shown by the large proportion of earnings, which is from local business, compared to that which is from through.

"The following is a statement of the gross earnings received from local and through traffic respectively for the past five years:

	Local.	Through.	Total.
1878.....	\$11,908,802.55	\$5,622,056.00	\$17,530,858.55
1879.....	12,124,639.38	5,028,523.78	17,153,163.16
1880.....	15,780,889.77	4,727,233.11	20,508,122.88
1881.....	18,379,860.47	5,714,340.48	24,094,200.95
1882.....	18,917,284.22	6,745,472.90	25,662,757.12
Total.....	\$77,111,476.39	\$27,837,516.27	\$104,948,992.66

"The states of California and Nevada have grown in population but slowly for a number of years, the dispersion to adjacent territories having nearly offset the acquisition from Europe and Eastern states; but in the past few months the immigration has greatly increased, and the tide is now flowing strongly over the territories and districts served by the roads of this company. This immigration will be largely added to by the opening of the Southern Pacific route to the Gulf ports, which makes it practicable to bring in migrants from Europe at very much reduced rates direct to their respective destinations. By this means the unrivaled vine and fruit lands of the Pacific Coast may become the home of a dense population, cultivating the soil, whose products will furnish a large amount of transportation to railroads. The benefits to be derived from an increased settlement along the Central Pacific main line and branches will be much more than an equivalent for the loss of any through traffic that may go by other routes. While the growing prosperity of the Pacific Coast will tend constantly to increase the local earnings of the company's lines, the equally constant growth of the traffic across the continent must always give to this central route its fair proportion of through business."

## EXTENSION OF OREGON DIVISION.

"The extension of the Oregon Division of this company from Redding northward to the state line—a distance of about 140 miles—is now in process of construction and will be vigorously prosecuted till completion, which it is expected will take place some time during the year 1884. At the state line the road will be met by the Oregon & California Railroad Co., now building southward from Roseburg, Oregon, and with it will form a through line between San Francisco & Portland, connecting the railway systems of California and Oregon.

"The completion of this division will open up a large tract of country, which heretofore has been remote from settlement and market in consequence of lack of facilities for transportation. This tract is well watered, of sublime scenery, with climate healthful and invigorating, and possesses resources both rich and abundant. Among these may be mentioned, in the counties of Shasta, Trinity, Siskiyou and Modoc, extensive and valuable deposits of gold, silver, copper and iron; expansive and grand forests of the finest kinds of timber, including pine, fir, spruce, cedar and oak; large bodies of agricultural lands until now used only for grazing, and valleys of rich grass lands affording nutritious pastures. In this region, notwithstanding its difficulty of access, there is now comparatively a large number of inhabitants. Farms and vineyards have been cultivated with great success, and wine and brandy are manufactured. Apples, pears, plums and cherries can be raised. Butter and cheese are made in great quantities—the fine pastures and pure cold water being specially adapted to that branch of industry. Cattle, horses and hogs abound. Wheat, barley, oats and Indian corn are grown in almost all the valleys; but in consequence of the lack of transportation facilities, these products are generally used as food for animals. After completion of the railroad, their carriage to market will afford an extensive and lucrative business, which will grow from year to year as immigration increases and settlement advances. The counties mentioned can of themselves support in comfort and wealth a large population.

"The completion of this railroad will also bring to California the extensive trade and travel of Southern Oregon. This country has a large scope of agricultural territory, which, for a long time past, has been awaiting development. The population is quite numerous, and is increasing rapidly. When to this is added through traffic, the outlook for profitable business for the road is very flattering. This will be at once apparent, from the fact that 20 large steamers each month, loaded with freight and crowded with passengers, regularly ply between Portland and San Francisco."





Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## JUNE EARNINGS.

There are 71 different railroads that have now reported their earnings for June last. The aggregate mileage and earnings and the average earnings per mile of these 71 roads were:

	1883.	1882.	Inc. or Dec.	P. c.
Miles of road.....	58,043	51,823	+ 6,220	12.0
Total earnings.....	\$26,545,636	\$24,623,246	+ \$1,922,390	7.8
Earnings per mile....	457	475	- 18	3.8

The comparison is with an unfavorable month. Last year the 66 roads reporting for June with an increase of 12.3 per cent. in mileage had an increase of but 0.6 per cent. in earnings, and a decrease of 10.4 per cent. in earnings per mile. In 1881 54 roads reporting had an increase of 13.4 per cent. in earnings per mile; in 1880 50 roads had an increase of no less than 16½ per cent. in average earnings per mile. The month can hardly be called a favorable one this year. In view of the large increase of mileage, a decrease of 3½ per cent. in earnings per mile would not be very unfavorable, but for the fact that the earnings were unusually bad last year. The gain in gross earnings since then, if entirely due to the additional road, would show earnings at the rate of \$309 per mile. The increase in mileage, though very large, is no more than in 1881 or 1880.

We shall discuss below the earnings in different sections of the country, and first the group west of Lake Michigan and Chicago as far as the Missouri, and southwest far enough to include the Chicago & Alton on the south and east. The aggregate mileage and earnings of these roads and their average earnings per mile in June this year and last compare as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Miles.....	15,934	14,071	+ 1,863	13.3
Total earnings.....	\$7,843,851	\$7,222,069	+ \$621,782	8.6
Earnings per mile....	492	513	- 21	4.1

There are 15 roads in this class that report, including the Chicago & Alton on the south and east. Only three of them have any decrease in earnings—the Marquette, Houghton & Ontonagon, the Manitoba and the Central Iowa. The decrease of the Ontonagon road we have explained before. In traffic it has little in common with other roads of this group. The Manitoba's decrease of 10.8 per cent. in earnings is in the face of an increase of 37 per cent. in mileage, so that the decrease in earnings per mile is from \$939 to \$611, or 35 per cent. But it should be noticed that its earnings per mile are still much above the average, and are positively large; last year they were much larger than those of any Western road reporting

excepting the Ontonagon. Then it had all the construction material for the Canadian Pacific to carry; this year the Canadian Pacific takes this material over its own line from its Lake Superior terminus. We know of nothing else that is likely to have decreased its total earnings except a reduction in immigrant rates, consequent on the competition of the same road. Possibly the rates have been reduced on other Manitoba traffic by the same means. We should expect this to be the case, and that a good share of the Manitoba imports would go by the new route.

The large increases are 40 per cent. by the St. Paul & Duluth, 25 by the Milwaukee & St. Paul, 25½ by the Milwaukee, Lake Shore & Western (only 7 per cent. in earnings per mile), and 14½ by the St. Paul & Omaha. The gain of the Northern Pacific is insignificant in comparison with its increase of mileage. If the part off the road worked last year did as well this year as then, the additional 403 miles earned but \$84,083, or \$209 per mile; still its earnings per mile are very respectable, amounting to \$464, which is a little more than the Milwaukee & St. Paul made (\$450).

But when we compare with 1882, we should remember that June was a very bad month for most of the Northwestern roads, except those northwest of St. Paul and the Ontonagon, which did extraordinarily well then. Twelve of the 15 roads included above—all but the St. Paul & Duluth, the Des Moines & Fort Dodge and the Green Bay road—have had the following mileage and earnings for the last three years:

	1883.	1882.	1881.
Miles.....	15,380	13,571	11,667
Total earnings.....	\$7,666,342	\$7,086,488	\$6,857,228
Earnings per mile.....	506	522	588

In 1882, six of these roads, the Milwaukee & St. Paul, the Northwestern, the St. Paul & Omaha, the Illinois Central in Iowa, the Chicago & Alton and the Hannibal & St. Joseph all had smaller total earnings than in 1881, and in the aggregate they earned \$524,359 less, though they worked 1,040 more miles of road. This year these six roads have an increase of \$654,233 over 1882, and consequently of \$129,874 over 1881; but they have 668 more miles than last year and 1,708 more than in 1881; and the gain in earnings is trifling compared with the increase in mileage. June was an extraordinarily favorable month for the Northwestern grain-carriers in 1881, however. The grain kept back by the snow blockades that lasted till near May, and by the late spring, came forward in June in quantities never equaled before nor since. We see that the average earnings per mile of the ten roads reporting for the three years is not only 3 per cent. less than last year, but is 11 per cent. less than in 1881.

This group, excluding the Ontonagon, has made the following gains and losses, in the aggregate, in six successive months, compared with last year:

	Jan.	Feb.	March.	April.	May.	June.
Loss.	\$122,505	\$319,505	\$1,517,490	\$1,206,322	\$687,962	\$619,573
Gain.						

These monthly earnings are modified somewhat as corrections are made, so that the sum for the six months does not quite agree with the reports of the earnings for the whole six months. The latter makes the gain \$3,725,441 (\$136,164 more than the sum of the monthly gains and losses), which seems a great increase; but as it took 1,363 more miles of road to make it, it is not so satisfactory after all.

Next we take the ten roads west and southwest of St. Louis that report:

	1883.	1882.	Inc. or Dec.	P. c.
Miles.....	7,622	6,605	+ 1,017	15.4
Total earnings.....	\$3,027,997	\$2,602,646	+ \$425,351	16.3
Earnings per mile.....	397	394	+ 3	0.8

There is an enormous increase of mileage, but the increase in earnings is even greater, and there is a slight increase in earnings per mile. Five of these roads had a decrease in earnings per mile last year, which was unfavorable. All the roads gain this year, and some of them largely.

This group of roads (excluding the Gulf, Colorado & Santa Fe) has reported the following gains in successive months this year:

	Jan.	Feb.	March.	April.	May.	June.
Loss.	\$959,591	\$583,396	\$978,699	\$339,921	\$495,489	\$367,343
Gain.						

The sum of these gains is \$3,724,439, whereas the gains reported for the six months amount to but \$3,441,595, by which it appears that in the monthly statements of these roads (which are made so early that they must be partly estimated) the estimates of increase have been too sanguine by about 7½ per cent.

In the South, east of the Mississippi, 18 roads report, whose total mileage and earnings and average earnings per mile were:

	1883.	1882.	Inc. or Dec.	P. c.
Miles.....	9,126	8,705	+ 421	4.8
Total earnings.....	\$3,319,848	\$2,886,515	+ \$433,333	15.0
Earnings per mile.....	364	332	+ 32	9.7

Only three of these roads show any decrease in total earnings, and as a whole they did extremely well.

The roads showing decreases are the Mobile & Ohio, the Columbia & Greenville, and the Virginia Midland, and their decreases are not large. The large increases are 32½ per cent. by the Alabama Great Southern, 52 by the Lexington & Big Sandy, 42½ by the Florida Transit, 17½ by the Louisville & Nashville, and 19½ by the Memphis & Charleston. The Florida road's increase, however, is due to astonishingly small earnings last year—only \$126 per mile—which has increased this year to the still very small amount of \$162. Generally the earnings per mile of these Southern roads are very small, and very few make returns to their stockholders unless they have small capital accounts, and especially small debts. The only ones earning as much as \$400 a mile last June are the Illinois Central's Southern Division (\$407), the Louisville & Nashville (\$512), the Cincinnati Southern (\$621), and the Chesapeake & Ohio (\$631). The latter is not much more than the average of all United States railroads. On the other hand, no less than five of these 16 roads earned less than \$200 per mile—the Vicksburg & Meridian (\$196), the Charlotte, Columbia & Augusta (\$190), the Florida Transit (\$162), the Western North Carolina (\$122), and the Columbia & Greenville (\$105). Few Northern roads succeed in living on such short rations.

The gains of ten of this group of roads (with 7,384 of the 9,126 miles of road) have been as follows in successive months:

	Jan.	Feb.	March.	April.	May.	June.
Loss.	\$473,453	\$436,506	\$343,816	\$84,208	\$353,174	\$334,636
Gain.						

The sum of these is \$2,025,793, whereas the reports for the whole six months show a gain of \$2,304,440, so that it appears that the monthly statements of these roads have estimated the gains about 13½ per cent. too little. The increase in June is just about equal to the monthly average for the half-year.

We now take up the Central group of Northern roads—west of Pennsylvania, north of the Ohio and east of the Mississippi, and the Chicago & Alton Railroad, but including the Wabash, which has no less than 1,363 miles west of the Mississippi, most of it belonging to the district with the roads which we have classified as "west and southwest of Chicago;" but as it has 2,266 miles east of the Mississippi, and its traffic is subject to circumstances which are common to many roads east of Chicago and St. Louis, we have placed it with this group. The district includes all the immediate western connections of the trunk lines, of which only the Chicago & Grand Trunk reports earnings. Indeed, the roads in this district that report are chiefly the less important ones. Only one earned as much as \$600 per mile last June; a few as much as \$500 (Chicago & Grand Trunk, \$806; Chicago & Eastern Illinois, \$573; Cincinnati, Indianapolis, St. Louis & Chicago, \$521; Detroit, Lansing & Northern, \$581; Flint & Pere Marquette, \$595; Illinois Central in Illinois, \$576; Wabash, \$317). Such roads as the Lake Shore, the Fort Wayne and the Panhandle, which do not report, earn much more than any of these—on the average, recently, more than \$1,500 per mile per month. If they were included they would change vastly the following statement of the aggregate mileage and earnings and the average earnings per mile of the 19 roads in this group that have reported:

	1883.	1882.	Inc. or Dec.	P. c.
Miles.....	9,392	8,715	+ 677	7.8
Total earnings.....	\$3,495,637	\$3,260,770	+ \$234,867	7.2
Earn. per mile.....	372	376	- 4	1.0

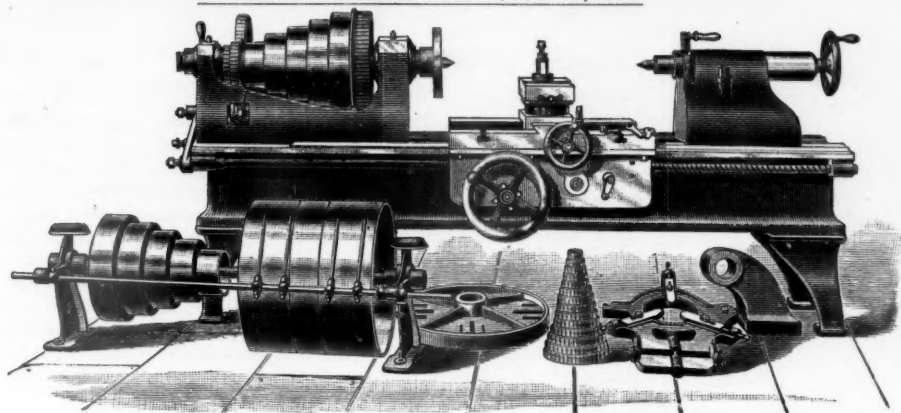
The increase in earnings has nearly, but not quite, kept pace with the increase in mileage, and the slight decrease in earnings per mile would not be unsatisfactory if earnings had been good last year. They were, however, not by any means satisfactory then, when the movement of traffic from the West was extraordinarily small. All the roads that report this year, except the Detroit, Lansing & Northern, reported also last year, and with 983 more miles of road they earned \$241,318 less than in 1881, and their earnings per mile fell from \$449 to \$368. That with 1,660 more miles of road they should have earned \$3,364,345 this year, against \$3,367,913 in 1881, is not by any means encouraging. Bad crops of all kinds in 1881 and a bad corn crop in 1882 have probably had most to do with this, but an undue multiplication of roads has also had much to do with it.

Fifteen roads in this group have made the following gains and losses in successive months:

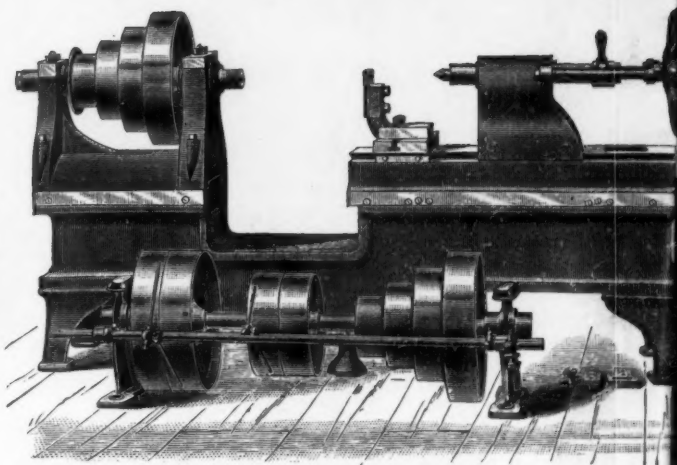
	Jan.	Feb.	March.	April.	May.	June.
Loss.	\$68,284	\$60,122	\$270,362	\$21,792	\$186,971	\$212,284
Gain.						

These 15 roads have 4,334 miles of road and but 185 miles more than last year. The absence of the Wabash makes it even less representative than the statement for the 19 roads for June alone. The Wabash has reported for every month except April, and for the five months of this year for which it has reported earnings they were, in the aggregate, \$6,298,141 this year and

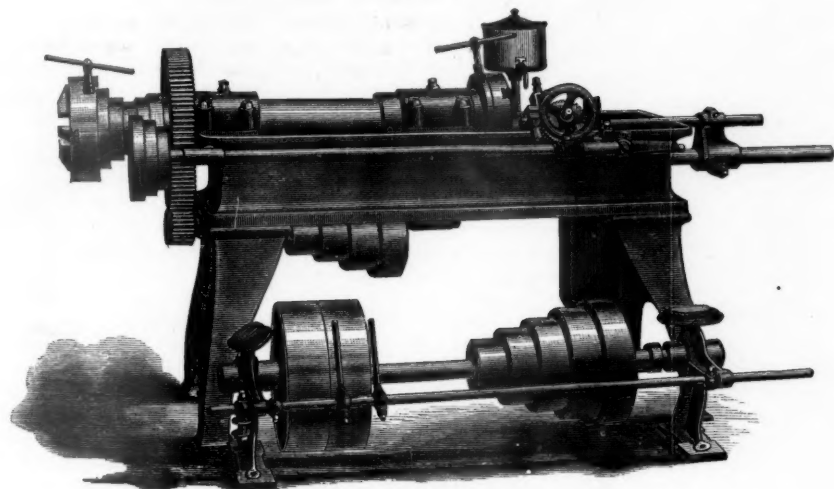




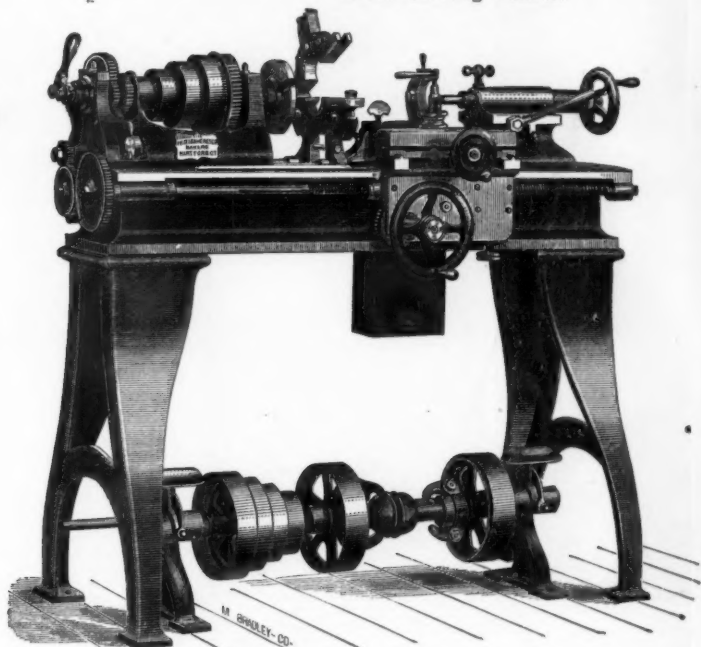
27-inch Engine Lathe.



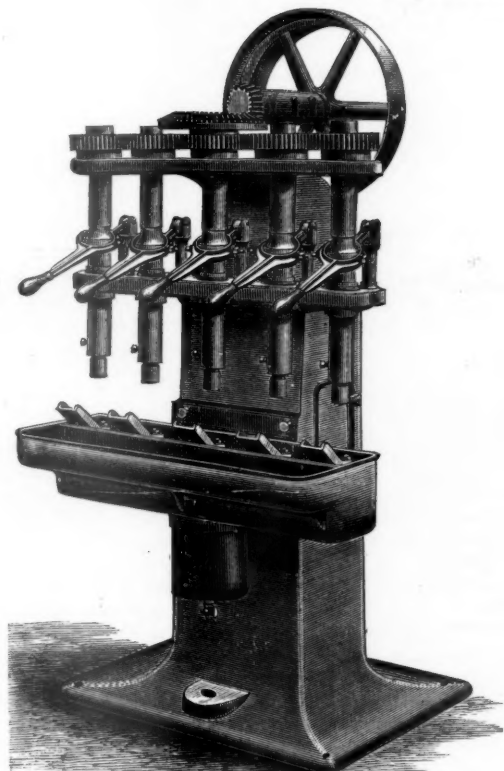
28-inch Chucking Machine.



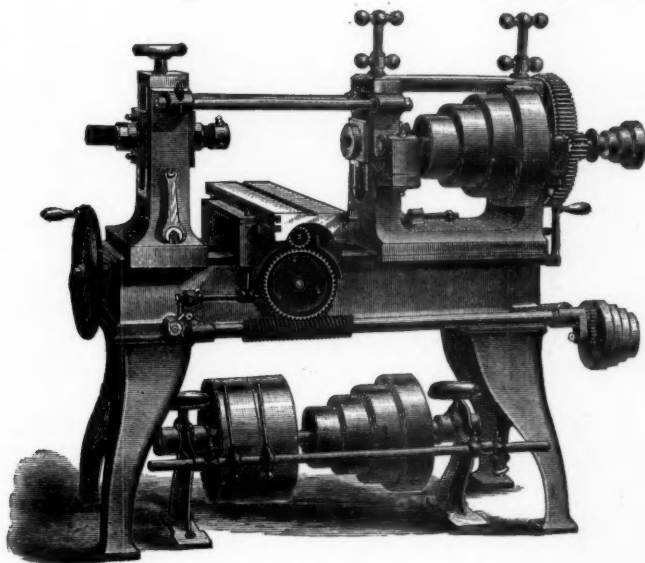
No. 3 Cutting-off Machine.



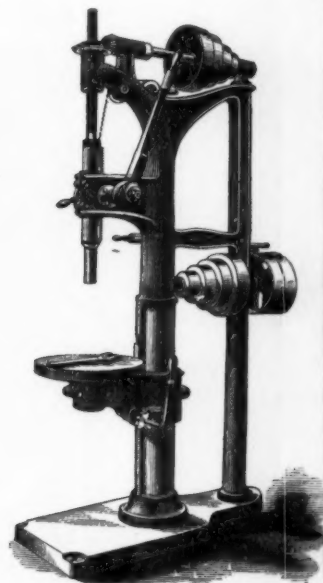
13-inch Engine Lathe, Weighted Carriage.



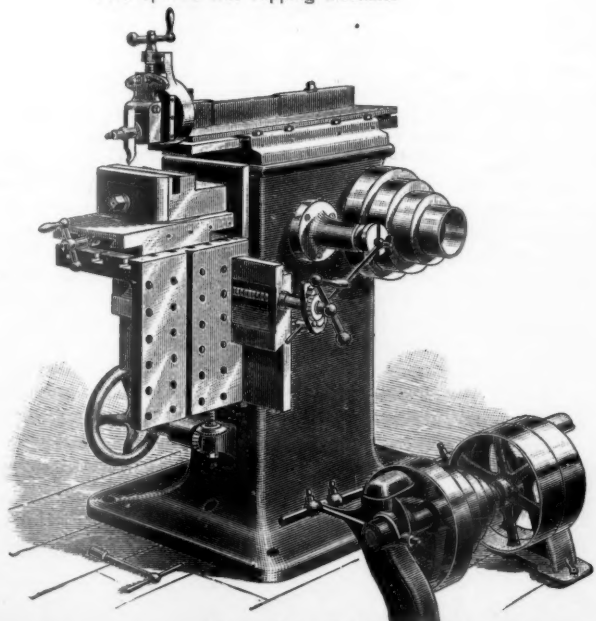
Five Spindle Nut Tapping Machine.



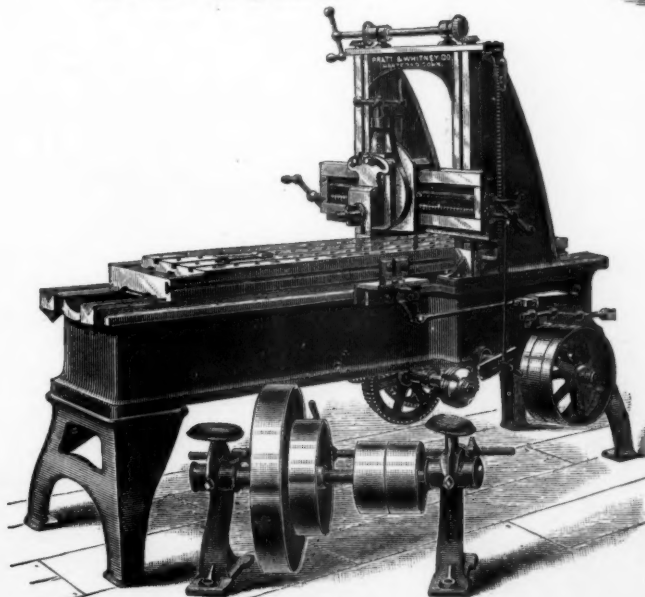
No. 3 Power Milling Machine.



No. 3 Manufacturer's Drill.

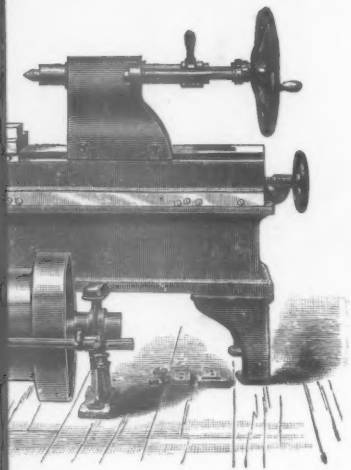


10-inch Pillar Shaper.

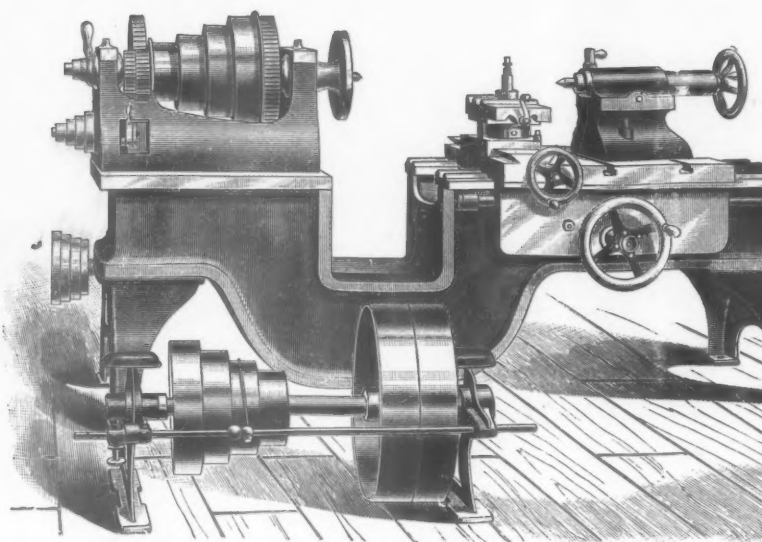


16-inch Planer.

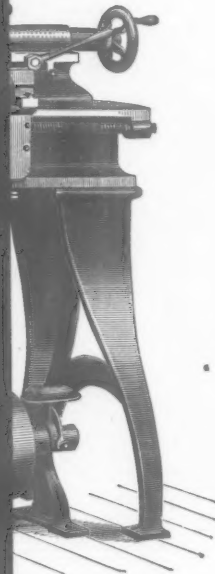




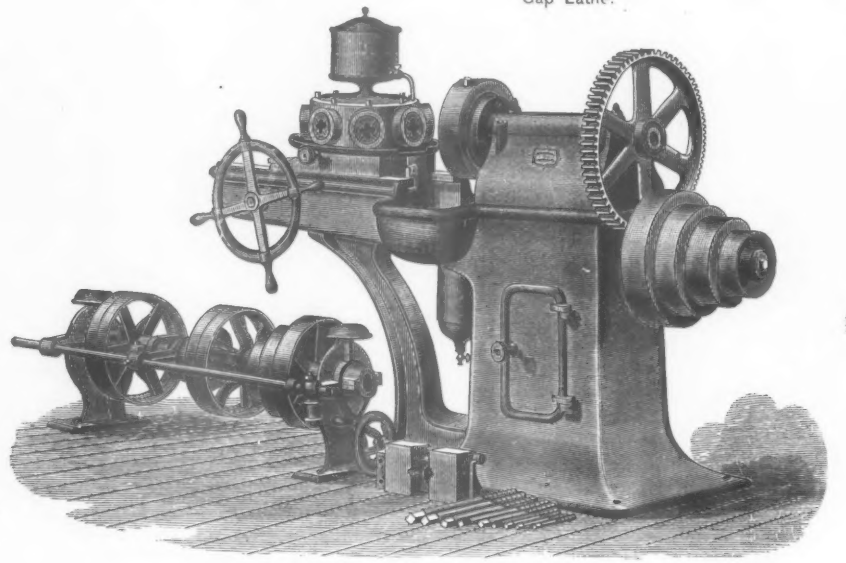
Machine.



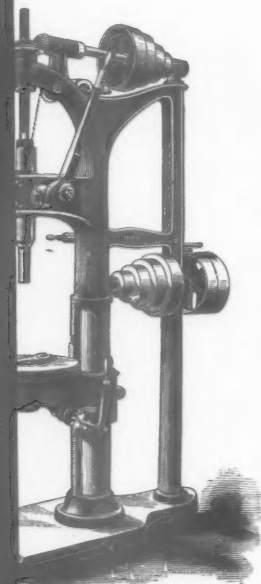
Gap Lathe.



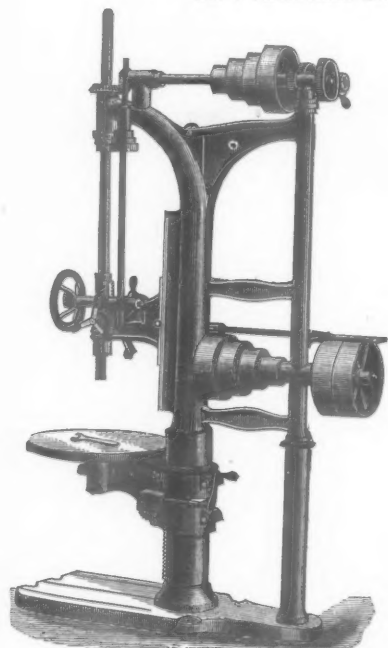
Machine.



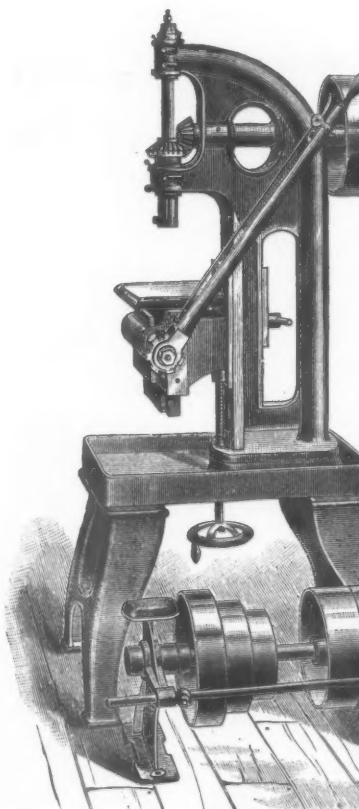
No. 4 Turret Head Boring Cutter.



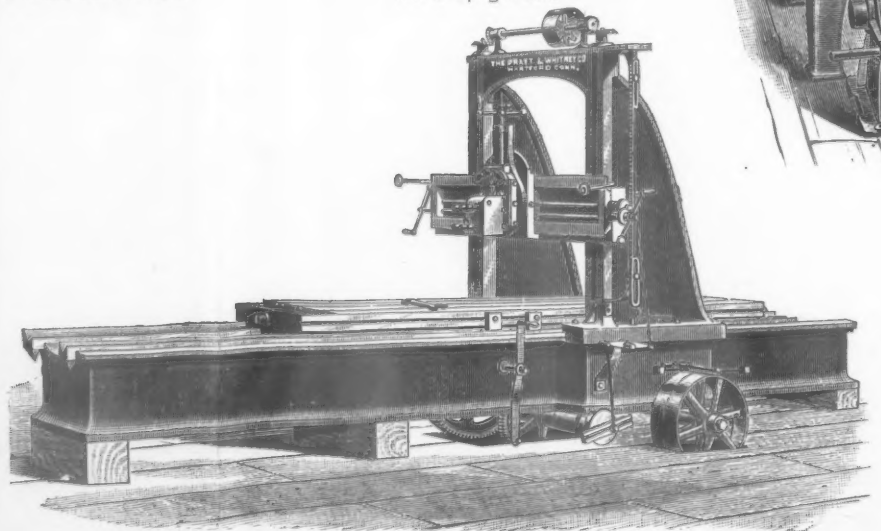
No. 3 Manufacturer's Drill.



No. 2 Upright Drill.

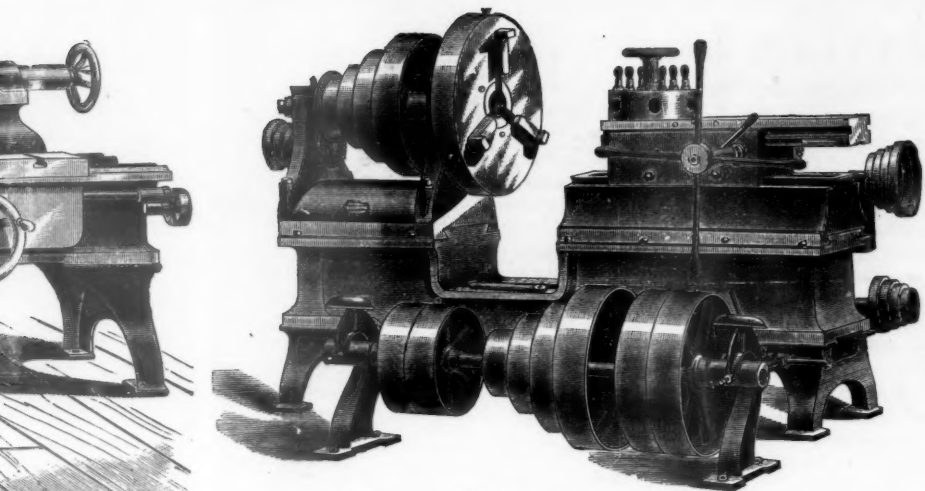


Champion Drill.

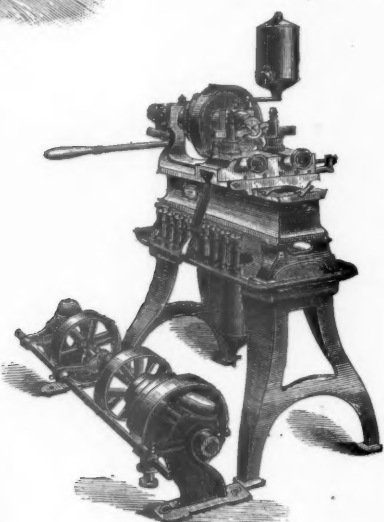


40-inch Planer.

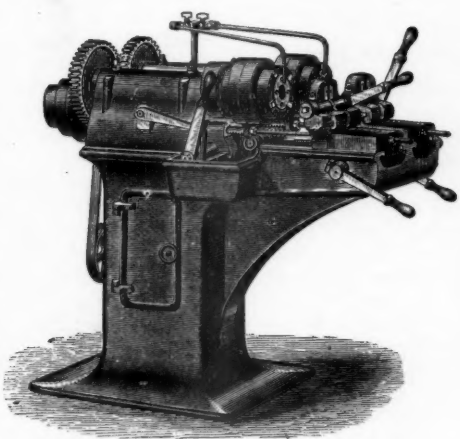




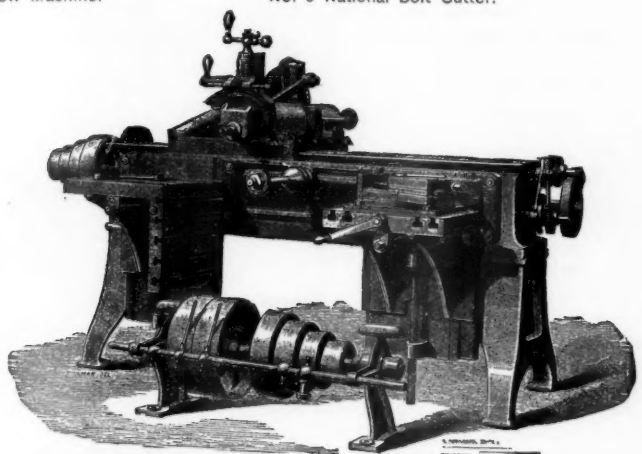
52-inch Chucking Machine.



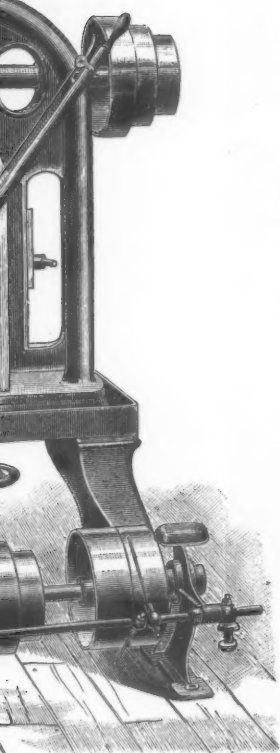
No. 2 Screw Machine.



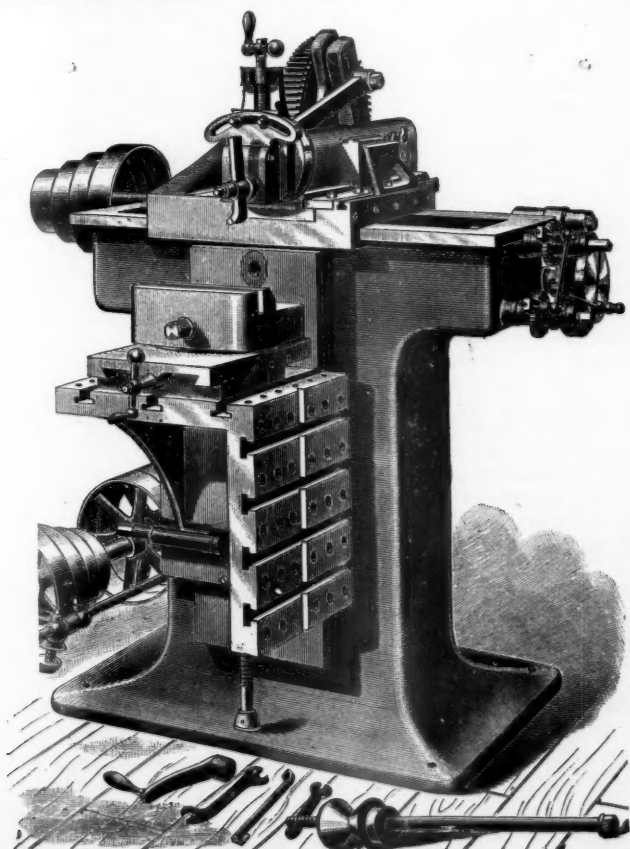
No. 3 National Bolt Cutter.



14-inch Shaping Machine.



Champion Drill.



10-inch Crank Shaping Machine.







\$187,085 more than in the corresponding five months last year, while it works now about 273 more miles of road. This road is so large and extended a system, having lines in three of the grand divisions which we have made, that its progress in earnings is worth noting separately, the more so because on account of the dropping out of the April earnings comparisons for more than one month of previous years are not often made. For four successive years they and the mileage and average earnings per mile have been, for the five months from January to June, excluding April:

Wabash Earnings for Five Months.				
	1880.	1881.	1882.	1883.
Miles.....	2,384	2,480	3,350	3,520
Total earnings.....	\$5,318.475	\$5,082,605	\$6,051,056	\$6,238,141
Earn. per mile.....	2.231	2.049	1.806	1.770

This year there was a trifling decrease in June, without significance but for the increase in mileage and the fact that the earnings were very unsatisfactory in the last half of last year. In view of the fact that there was a very heavy wheat crop in 1882 on its lines, and a miserable one in 1881, and that though corn was a poor crop directly on its lines east of the Mississippi last year, as well as the year before, there was a larger crop on its Missouri lines, and a very large one in Kansas, a good share of whose crops it carries—in view of this, we say, it is surprising that this road has done so poorly this year, especially as west-bound through rates were much higher than last year.

But we have been getting far away from our table of gains and losses of the 15 roads north of the Ohio in the several months of this year. Only in March did they gain more than in June. For the six months the aggregate of gains reported above was \$819,815, while their reports for the entire half-year show gains of but \$718,182. Six of the fifteen roads show a small decrease for the half-year—the Chicago & Eastern Illinois (3.1 per cent.), the Cincinnati, Indianapolis, St. Louis & Chicago (2 per cent.), the Evansville & Terre Haute (8 per cent.), the Illinois lines of the Illinois Central (3.6 per cent.), the Peoria, Decatur & Evansville (8.3 per cent.), and the Belleville Line of the Alton & Terre Haute (1.4 per cent.). None of these has any considerable change in mileage. Although nine of the 15 make gains, seven-eighths of their aggregate gain is by three roads, the Chicago & Grand Trunk gaining 38 per cent., the Flint & Pere Marquette 194, and the Indiana, Bloomington & Western 20½ per cent.—the latter probably due to its additional 140 miles of road.

We now pass to the few Eastern roads that have reported so far—the Eastern, the Grand Trunk, the Long Island and the New York & New England. They make the following showing:

Eastern Railroads.				
	1883.	1882.	Increase.	P. c.
Miles.....	3,358	3,259	99	3.0
Total earnings.....	\$2,574,935	\$2,378,613	\$196,322	8.3
Earnings per mile.....	767	730	37	5.0

This is a large increase in earnings, but the Grand Trunk, at least (like other trunk lines), was not doing well last year. It gains 9½ per cent. this year and the Long Island 10½ per cent. There are too few of these roads, however, to enable us to judge of the great mass of valuable railroad property west of Ohio.

For the half-year, these four roads, with an increase of 3 per cent. in mileage, made an increase of \$1,043,319 in earnings, or nearly 9 per cent., bringing them up to \$12,792,449. All of them but the Grand Trunk made gains also in 1882 over 1881, but then they had an increase of 148 miles (5 per cent.) in mileage, and their increase in earnings was but \$296,334, or 2.6 per cent.

Last we take up four roads in the far West—the Union and Central Pacific, the Atchison, Topeka & Santa Fe, and the Denver & Rio Grande.

They report, in the aggregate, for June:

	1883.	1882.	Incr. or Dec.	P. c.
Miles.....	10,733	9,558	1,175	12.3
Total earnings.....	\$5,896,600	\$6,110,805	\$214,205	3.5
Earn. per mile.....	550	639	89	14.0

All these roads but the Denver & Rio Grande have a decrease in earnings in June, and as that had an increase of no less than 55 per cent. in mileage, its increase in earnings was insignificant, and its earnings per mile decreased from \$500 to \$330, or 22 per cent. These roads have, in the aggregate, had a decrease in earnings every month of this year except March, though the Atchison and the Union Pacific have a vast mileage in the agricultural part of Kansas and Nebraska, which had magnificent crops last year, and very bad ones the year before. Something seems to all the traffic of the great grazing plains and the Rocky Mountain mining regions and the Pacific coast. For the half-year the aggregate earnings of these four roads have been:

	1883.	1882.	Decrease.	P. c.
Earnings.....	\$34,299,441	\$35,579,280	\$1,279,838	3.6
Per mile.....	3,195	3,723	528	14.2

For the half-year, every one of these roads has smaller earnings, even the Denver, which has so large an increase in mileage.

For the half-year ending with June these 71 roads report as follows (April earnings of the Wabash omitted both years):

	1883.	1882.	Incr. or Dec.	P. c.
Miles.....	57,328	51,008	6,320	12.2
Total earnings.....	\$150,978,686	\$138,938,240	\$12,040,446	8.7
Earn. per mile.....	2,636	2,724	88	3.2

The average mileage worked is considerably less for the half-year than for June, but the difference in the two years is the same. An increase of one-eighth in mileage with an increase of one-twelfth in earnings has resulted in a decrease of one-thirtieth in earnings per mile. The addition to the earnings has been at the rate of \$1,936 per mile of road added, which is much better than most new roads do. Last year the 66 roads that reported gained 11.4 per cent. in earnings, with an increase of 11.8 per cent. in mileage, and their decrease in earnings per mile was but 0.3 per cent. The only really large decreases in total earnings are on the Central Pacific and the Marquette, Houghton & Ontonagon; but several roads with a large increase in mileage have made but a small increase in earnings.

#### A SCREW-THREAD PRIMER.

Notwithstanding all the discussion of this subject, and all that has been written about it, there are still many persons whose duties require that they should know all about the standard system of screw-threads, but who are nevertheless in almost complete ignorance of what has been done, or of what may be called the present status of the question. It must be admitted that the information which such people should have is not very readily accessible. It is contained in various articles and reports of the existence of which a person needing information would probably be ignorant. Thus the proceedings of the sixteenth annual convention of the Master Car-Builders' Association contains a report of a special committee on this subject which gives a history of what has been done in relation to a standard system of screw-threads. The report, however, is a long one, and probably those who want to learn only the essential principles and practice which should control the construction of standard screw-threads would not have the time or patience to read it. One of the difficulties in the way of the general introduction of the standard system of screw-threads is that there are so many persons belonging to the class described who do not know what the standard is which has been recommended for general adoption. It is proposed in this article to describe its essential features in as simple and clear a way as possible. There will be nothing, or very little, that will be new in what is said, and which may not be found in other publications. All that is aimed at is to present the essential points of what has heretofore been stated in as clear and simple a way as possible.

It will not be necessary to say to the persons for whom we are writing that, in order that bolts and nuts may be interchangeable, it is essential that they should have the same number of threads to the inch, as obviously a ½ nut with nine threads to an inch will not screw on a bolt with twelve, without injuring or destroying the threads of one or both. Therefore, in order to make bolts and nuts interchangeable, the first thing which had to be done was to adopt a standard number of threads to an inch for each diameter of screws.

Before giving the number of threads per inch which is now the standard in this country, it should be explained that "in 1864 the inconvenience and confusion resulting from the diversity in the screw-threads used in machine and other construction was brought up for consideration before the Franklin Institute of Philadelphia. A committee was then appointed to investigate and report on the subject. That committee recommended the system designed by Mr. William Sellers, and the Institute afterwards adopted their recommendation."

In 1868 the system was authorized for the naval service by the Secretary of the Navy, and soon after the Master Mechanics' Association, and in 1871 the Master Car-Builders' Association recommended it for use in the construction of locomotives and cars.

The following are the numbers of threads to an inch which are specified for the different sizes of screws.

Diameter of screw.	No. of threads per inch.
¼ inch.....	20
⅜ ".....	18
½ ".....	16
⅝ ".....	14
¾ ".....	13
⅞ ".....	12
1 ".....	11
1 ¼ ".....	10
1 ½ ".....	9
1 ¾ ".....	8
2 ".....	7

Unfortunately, when the two associations named

recommended the Sellers system of screw-threads for use on railroads, the members did not seem to understand fully what the system was, and the impression was very general among the members that it consisted merely of the specified number of threads to an inch. The consequence was that the forms of the threads of screws made at different places varied, and consequently the bolts and nuts were often not interchangeable. It was also found that it was a common practice among iron manufacturers to roll iron over-size, that is, iron that was nominally ¼ in. in diameter was found to be ⅜ or ⅞ larger. If the taps and dies used in cutting the screws for such iron were of the exact size, it of course was necessary to cut away the excess of material, which injured the dies and took more time. To avoid this it was a very common practice to have taps and dies made over-size, that is, ¼ taps instead of being of that diameter were made ⅜ or ⅞ or possibly ⅞ in. larger in diameter than that size. This of course made it impossible to interchange bolts and nuts which were of the right size with those which were larger, and as there was no common practice in the matter of over-size, those who made taps and dies ⅜ large could not interchange with those who increased the size ⅞.

It was also found that even where different manufacturers aimed to make taps and dies of the same nominal diameters, they varied from these sizes, from the fact that they had no common standards of measurement of sufficient precision to insure interchangeability. Investigation showed, too, that a very high degree of precision is required in the manufacture of taps and dies, in order to make bolts and nuts interchangeable, and that a difference of 0.002 of an inch in the diameter of a ¼-in. bolt and nut will make them fit each other loosely. The attention of those interested in the matter was therefore directed to the means of attaining the required degree of precision. The efforts of those who took the matter up were seconded by the Pratt & Whitney Company, of Hartford, Conn., which devoted much time and money to investigating the subject, and to perfecting the machinery required to make gauges of the required accuracy to insure interchangeability. As it would take too much space to recount the successive steps which it was necessary to take to accomplish the end aimed at, the results only will be described here.

Before doing so it should be fully explained that the Sellers system of screw-threads consists not alone in the number of threads to an inch, but the diameters of the screws and the form of the threads are also distinctly and exactly specified. The angle between the sides of the thread is 60°, and the point of the thread and the space between it is flattened. The amount taken off the point, and that filled in at the root, are equal to one-eighth of the pitch. Now it should be observed that all these dimensions and proportions are definitely specified. For example, the outside diameters of Sellers screws are ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1 ¼, 1 ½ in. and upward. There are no sizes between those given. There is no such thing as a screw ⅜ or ⅞ in. larger or smaller than the sizes given in the Sellers system. If mechanics wish to adopt the Sellers standard, they must therefore adopt these sizes and no others.

In making taps and dies to conform to the Sellers standard, it is therefore important that the diameter outside and at the root of the thread should be determined with sufficient precision to insure interchangeability. For this, and other similar purposes, what are called cylindrical size-gauges, figs. 1 and 2, are provided. The first is a hardened steel cylindrical plug



Fig. 1.



Fig. 2.

ground and lapped perfectly round and straight, and warranted not to vary more than 0.0005 of an inch from the true size. Fig. 2 is a ring which fits the cylindrical plug. Suitable calliper gauges, for use in the shop, are made and maintained to the correct size from the cylindrical gauges. In the manufacture of taps, cylindrical gauges are made for their outside



diameters, and also for the diameters at the root of the threads. In this way the required amount of precision in these dimensions can be maintained.

It will be impossible to explain, in an article like this, the ingenious methods which have been devised for making chasing tools which will cut threads whose sides will have an inclination of exactly 60° to each other, and which will leave just the right amount of material at the root of the threads. All this work must be done with the utmost precision to insure the interchangeability of bolts and nuts.

The question then naturally arises, whether this degree of precision can be maintained if the work of manufacturing taps and dies is done in ordinary shops. Any one acquainted with the processes and appliances needed to maintain the required degree of precision must, it is thought, inevitably conclude that if interchangeability of bolts and nuts is ever brought about it will be through the manufacture of taps and dies by firms who make a specialty of the business, and in shops supplied with all the appliances required to maintain a very high degree of precision.

The objection to having them made by one firm or company is that it would inevitably result in the creation of a monopoly, and deprive the users of taps and dies of the wholesome influence of competition. Therefore, when the question of abandoning the manufacture of these tools is proposed to either private firms or to railroad companies, they are apt to object to placing themselves in a position in which they would not have the privilege of buying such tools in the open market. What they require is some means of learning whether a given lot of taps and dies conform near enough to the standard dimensions and proportions to insure the interchangeability of the bolts and nuts made with them. To meet this requirement the Pratt & Whitney Company is making what it calls "internal and external standard thread gauges," represented by figs. 3 and 4.



Fig. 3.



Fig. 4.

The internal gauge (fig. 3) consists of a male screw, made to exact standard size, and the external gauge has a female screw, which is adjustable to the internal gauge. With a set of these gauges the nuts and bolts cut by any taps or dies can be tested at once, and it can be known whether they conform to the standard sizes. With such a set of gauges in the tool room of a railroad or other shop, the person in charge can at once know whether taps and dies bought of any firm are of the right size. This leaves the purchaser free to buy in the open market, and at the same time maintains the standard at the required degree of precision.

In adopting the Sellers or Franklin Institute or United States standard, as it is variously called, a difficulty arose from the fact that it is the habit of iron manufacturers to make iron over-size, and as there are no over-size screws in the Sellers system, if iron is too large it is necessary to cut it away with the dies. So great is this difficulty that, as already explained, the practice of making taps and dies over-size has become very general. If the Sellers system is adapted it is essential that iron should be obtained of the correct size, or very nearly so. Of course no high degree of precision is possible in rolling iron, and when exact sizes were demanded the question arose how much allowable variation there should be from the true size. The matter was discussed at a meeting of the Master Car-Builders' Club during the past winter, and after consultation with different iron-makers it was concluded that there might be a variation of about 0.01 in. in the smallest sizes, 0.015 in. in  $\frac{1}{4}$ -in. and 0.02 in 1 in. iron. It was suggested, too, that limit gauges should be made for inspecting iron. It was proposed to make these of calliper form, with two openings, one larger and the other smaller than the standard size, and then specify that the iron should enter the large end and not enter the small one. After further discussion it was agreed to make the difference in the size of the large and the small end of the gauge for  $\frac{1}{4}$ -in. iron 0.01 in., and increase the difference by 0.001 in. for the sizes above that. The following table of dimensions for the limit gauges

was therefore drawn up, and was recommended by the Master Car-Builders' Association.

Size of iron.	Size of large end of gauge.	Size of small end of gauge.	Difference in size of large and of small end of iron.
.....	0.2550	0.2450	0.010
.....	0.3180	0.3070	0.011
.....	0.3810	0.3690	0.012
.....	0.4440	0.4310	0.013
.....	0.5070	0.4930	0.014
.....	0.5700	0.5550	0.015
.....	0.6330	0.6170	0.016
.....	0.7585	0.7415	0.017
.....	0.8840	0.8660	0.018
.....	1.0095	0.9905	0.019
.....	1.1350	1.1150	0.020
.....	1.2650	1.2350	0.030

The Pratt & Whitney Company took the matter up, and at the Chicago Exposition of Railway Appliances it exhibited a complete set of such gauges, one of which is represented by Fig. 5.



Fig. 5.

It is obvious, though, that if used in inspecting iron, such gauges would soon wear so as not to be sufficiently accurate for the purpose for which they are intended. To provide for this the company has also made "standard reference gauges," Fig. 6, consisting



Fig. 6.

ing of a series of cylindrical gauges, arranged like steps, those at one end being of the sizes of the small ends of the calliper-gauges, and those at the other end the size of the large ends. Whenever it is suspected the calliper-gauges have been injuriously worn, they can be tested on the reference gauge and the required correction made. In this way their accuracy can be maintained.

The question is often asked by master mechanics, car-builders and others: What must we do to adopt the Sellers, Franklin Institute or United States standard system of screw threads. From what has been said it will be seen that, in taking these steps, what is required is:

1. Abandon the manufacture of taps and dies altogether.
2. Get a set of screw-gauges for testing the accuracy of the taps and dies that are bought.
3. Get a set of limit gauges for round iron, and require manufacturers to make iron to the size of those gauges, and then have every lot received inspected.
4. Abandon entirely the use of over-size screws for new work.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Atchison, Topeka & Santa Fe.*—Track is laid on a new branch from Socorro, N. M., west 3 miles.  
*Illinois Central.*—Track is laid on the Yazoo & Mississippi Valley Branch from Canton, Miss., west 8 miles.  
*Ithaca & Alma.*—Completed from Ithaca, Mich., north to Alma, 8 miles.  
*Kansas City & Southern.*—Extended from Jordan Springs, Mo., south to Grand River, 6 miles.

*Marietta & North Georgia.*—Extended from Talking Rock, Ga., north to Marble Cliff, 6 miles. Gauge, 3 ft.

*Memphis, Selma & Brunswick.*—Extended westward to Byhalla, Miss., 5 miles. Gauge, 5 ft.

*Michigan & Ohio.*—Extended from Augusta, Mich., eastward to Marshall, 22 miles.

*New York, West Shore & Buffalo.*—The line between Coeyman's Junction, N. Y., and Utica is completed by closing up various gaps, 94 miles in all.

*Pontiac, Oxford & Port Austin.*—Completed from Pontiac, Mich., northward to Oxford, 15 miles.

*Rochester & Ontario Belt.*—Completed from Rochester, N. Y., north to Windsor Beach, 6 miles.

*Rochester & Pittsburgh.*—Extended from Du Bois, Pa. southward to Punxsutawney, 22 miles.

This is a total of 197 miles of new railroad, making 2,588 miles thus far this year, against 5,100 miles reported at the corresponding time in 1882, 2,563 miles in 1881, 2,375 miles in 1880, 1,083 miles in 1879, 819 miles in 1878, 731 miles in 1877, 932 miles in 1876, 518 miles in 1875, 727 miles in 1874, and 1,696 miles in 1873.

THE BROOKLYN BRIDGE, during the first seven weeks that it was open, took in \$33,135 in tolls—an average of \$676 per day. But this is a greater amount than can be expected as the average hereafter; for when the bridge was first opened tens of thousands crossed it out of curiosity, and the receipts were \$10,060 the first week, \$4,906 the second, and only \$2,567 in the seventh week. The railroad over the bridge will soon be opened, and will add something to the receipts, though we do not anticipate that there will be much travel upon it, as the fare will be five cents, against one and two cents by the ferries, and the distance is only a mile, so that little time can be saved by any speed. The interest on the bonds issued by New York and Brooklyn to pay for the bridge is \$1,019,025, or \$2,792 per day, and the income, with the railroad worked as is proposed, will not be more than one-fourth of that, we venture to say. The cost of maintenance is estimated at \$150,000 a year, but against that is an estimated rent of \$40,000 from arch spaces under the approaches in the two cities. Thus if the receipts should be double our estimate, they would not pay over half the interest. And we do not see how that can be greatly increased unless cars run through over the bridge. If the Brooklyn street cars ran through across the bridge to New York with no more addition to the fare than the ferryage costs, then probably nearly all the people who go to the ferry in Brooklyn street cars, except those destined for places in New York below Fulton street, would cross the bridge; but it would be extremely difficult to provide a terminus in New York for the 12 or 15 street car lines that now run to the Brooklyn end of Fulton Ferry. Perhaps the best immediate use that could be made of the bridge would be to have the trains of the Third Avenue Elevated Railroad run over it to and from the Brooklyn terminus. If this were done, and the trains should run through down town as well as uptown in New York, it would go far towards solving the rapid transit problem for Brooklyn without the construction of another mile of railroad, and probably give to the bridge substantially all the ferry passengers who now ride on the street cars or omnibuses on the New York side. Whether it could be made for the interest of the elevated railroad to do this is another question, but we should think that it could. It would add enormously to its travel, but might add more than it could provide for on the Third Avenue road. It would seem that it might afford to pay something for such a use of the bridge, and if it paid very little per passenger and succeeded in getting the travel that now crosses the lower ferries, the receipts of the bridge would be larger than any amount probable as the bridge traffic now is or will be with cars which must be changed at each end of the bridge. If it be thought inadmissible that even the light locomotives of the elevated railroad should run over the bridge, or if the approaches are too steep for them, its cars might be taken over by the cable. This would be a drawback, as necessitating a little delay for attaching the locomotive at the New York junction; but it would not prevent carrying out the plan.

As we said when the bridge was opened, the full benefit of it will be obtained only when cars from an elevated railroad to the outskirts of Brooklyn run through over it and a New York Elevated road, but a very great advantage may be secured without waiting for a Brooklyn elevated railroad if cars can be made to run through from the Brooklyn end of the bridge and over a New York railroad. Something ought to be done to make the bridge useful as well as ornamental. With the traffic of the last week reported the two cities are paying in interest alone about 7½ cents for every passenger that walks across.

THE CANADIAN PACIFIC begins to make an important figure among American railroads. It is now working no less than 1,704 miles of road, or just about as much as the Northern Pacific, and its competition for the traffic of Manitoba, by its line from Lake Superior to Winnipeg, apparently is having a great effect on the earnings of the St. Paul, Minneapolis & Manitoba, which heretofore has had the whole of that traffic. A line of steamers plies between a Canadian port and its Lake Superior terminus, and lumber and other supplies for Canada can be carried that way with fewer miles of transportation than by rail, and it should be cheaper also. Winnipeg seems very remote, but actually it is but 435 miles from a Lake Superior port, which is as near as Chicago is to Montreal or Buffalo, and a place 435 miles from Chicago does not seem very remote. Manitoba has been growing



as no part of the Dominion ever did before, and apparently as fast as Kansas at its best days or Dakota recently, and the Canadian Pacific is its only outlet, though only 68 miles of it are used between Winnipeg and the St. Paul & Manitoba road at the border. The company now reports its earnings. In June they were \$567,775 from 1,704 miles of road, or \$333 per mile; the year before with 746 miles it earned \$245,261, or \$329 per mile. It is not all in Manitoba, however, or west of Lake Superior. It has about 450 miles of road in Ontario, from Montreal to Georgian Bay, with branches, and most of this is not new, but was bought and not built by the Canadian Pacific Company. For the half year ending with June its earnings were \$2,207,062, and 147 per cent. more than last year. The average length worked this year was probably not more than 1,000 miles, and not much was done with it in the winter. The reports of the character of the country west of Winnipeg are such as to make it probable that this part of the road, and when navigation is open the line from Winnipeg to Lake Superior, will have a heavy traffic some day, and if immigration continues as it has been for two years past, that day is not far distant. It is likely to have the traffic not only of a narrow belt along its line, but pretty nearly all that may exist in Manitoba. New roads that may be built to make accessible fertile tracts north and south of it are likely to be not parallel roads, but branches—not competitors, but feeders—the advantage of which will be enormous if Manitoba ever does have a considerable population.

CHICAGO THROUGH RAIL SHIPMENTS EASTWARD for the week ending July 7, for four successive years, have been:

	1880.	1881.	1882.	1883.
Tons.....	34,223	56,167	21,765	23,584

The shipments of the week this year were thus 1,819 tons (8.4 per cent.) more than in the corresponding week of last year, but were 32,583 tons (76 per cent.) less than in 1881 (during the railroad war, when 15 cents per 100 lbs. to New York was the common rate), and 10,639 tons (31 per cent.) less than in 1880, when the rate was 30 cents, or one-fifth more than this year and last. At the prevailing rates, the earnings this year were \$1,000 for every \$922 last year, \$1,560 in 1881, and \$1,740 in 1880. The shipments by the Chicago & Atlantic and the Nickel Plate are not included. Of the shipments of this first week of July this year 15.6 per cent. went by the Chicago & Grand Trunk, 19.7 by the Michigan Central, 18.7 by the Lake Shore, 26 by the Fort Wayne, 13.1 by the Chicago, St. Louis & Pittsburgh, and 6.9 by the Baltimore & Ohio. Thus the two Vanderbilt roads carried 38.4 per cent. of the whole, and the two Pennsylvania roads 39.1, against the 45½ and 35½ to which they are entitled in the pool.

For seven successive weeks the Chicago shipments have been, in tons:

	May 21.	May 31.	June 7.	June 14.	June 21.	June 30.	July 7.
	26,677	25,054	26,093	29,399	27,449	30,718	23,584

Thus the shipments of the first week of July were a fourth less than those of the last week of June, and the smallest of the seven weeks. They were, indeed, the smallest since the second week of August last year. But the two lines out of the pool carried about 4,700 tons this year, and nothing last year, so the total movement was not quite so small as might appear, though decidedly small, even after allowing for these outside shipments.

For the week ending July 14, the imperfect report of eastward shipments of flour, grain and provisions, through and local, gives the total as 24,834 tons, against 15,751 in the corresponding week of last year, and 21,037 in the previous week of this year—all very small shipments. The increase over last year is not significant, as the shipments in July last year were but 95,000 tons, which is less than in any other month since 1878, which is as far back as records have been kept.

Of the shipments last week the Chicago & Atlantic took 4,098 tons (16½ per cent.) and the Nickel Plate 1,221 tons (4.9 per cent.) Only the Lake Shore and the Fort Wayne took more than the Chicago & Atlantic.

JOINT EXECUTIVE COMMITTEE MEETINGS will be held in New York next week, the Passenger Department meeting Tuesday and the Freight Department Thursday.

#### NEW PUBLICATIONS.

Summer excursion books at this time of the year form a very considerable portion of railroad literature, and their number increases yearly with the growing disposition of the people to spend a part of the season in travel. The preparation and distribution of these books falls to the passenger departments, and while their first object is to advertise the attractions of their respective routes, they have in many cases succeeded in making works of considerable interest and value. We make mention here of a few of those which have reached us.

*Landscape Wonders of the Western World* is a little book issued by the Chicago, Burlington & Quincy, giving a brief description of the various routes of that company from Chicago to the Missouri River, its Denver Extension and its connections to the Pacific Coast, and in Colorado and New Mexico. It is less profusely illustrated than some of these books, but the descriptive matter is more direct and to the point than in most of them, and the information as to routes, fares, etc., is very full. The accompanying map, although small in scale, is correct, and gives the would-be traveler a better idea of the actual route of the road than the maps issued by railroad companies generally do.

*Summer in the Catskill Mountains* is issued by the New

York, West Shore & Buffalo Company, and the engravings and the brief descriptive matter are marked by the good taste which has characterized all the publications of this company. The map is certainly the best one of the Catskill region ever put in general circulation, showing the new lines of railroad and the country roads in much detail. It is a very useful guide book to the region which is now New York's chief Summer boarding-place, and is accompanied by long lists of the hotels and boarding-houses reached by the railroads and stage lines, with their accommodations, prices, etc. The West Shore road, by its location and connections west of the Hudson, has now a most convenient line to all the Catskill country, and apparently means to make the most of its advantages.

*The Scenic Attractions and Summer Resorts on the Virginia, Tennessee & Georgia Air Line* is issued by the Shenandoah Valley, the Norfolk & Western and the East Tennessee, Virginia & Georgia companies as represented jointly by General Passenger Agent Pope. It is accompanied by three maps and a number of well-executed engravings, chiefly of scenery in the Shenandoah Valley and the hill country of East Tennessee and Alabama. It is a guide to a region too little known to most Northern tourists, although there is a growing appreciation, not only of its scenic beauties, but also of its industrial and commercial value. The descriptive matter, although a little marred by some attempts at fine writing, gives a fair idea of the extent of the Southern hill country covered by this system of roads, with its extensions to the seacoast at Norfolk and Brunswick and to the Mississippi at Memphis. The book will have been well placed if it induces some Northern travelers to visit the picturesque region of the Virginia Springs, the beautiful valleys of the Shenandoah, the French Broad and the Upper Tennessee and the rich uplands of North Georgia and Alabama, about which most of us have read, but which very few of us have seen.

*A Reconnaissance of the Golden Northwest* is one of the most elaborate of the summer books, and contains a running description, accompanied by many illustrations, of the more important points in Wisconsin, Minnesota, Iowa and Dakota reached by the great system of roads belonging to the Chicago, Milwaukee & St. Paul Company. It is necessarily a book of considerable size and contains much useful information to the traveler in the Northwest. The execution of the volume is very fair.

#### EDITORIAL CORRESPONDENCE.

##### The Chicago Exposition of Railway Appliances.

Nathan & Dreyfus, of New York, exhibited the Nathan & Dreyfus locomotive injector in six different sizes, of the Monitor lifting and non-lifting form; also the fixtures, check-valves, couplings, etc., for the application of their injectors, and their improved oil cups or lubricators of various kinds. They had also in their collection their new boiler washer and the Watkeys independent valve-seat, for the sale of which they are sole agents; also a model of A. J. Stevens' valve gear, which is a modification of the well-known Walschaert valve-gear. Mr. Stevens' gear is said to give a more perfect motion to the valve than any other similar form of gear. The same firm also exhibited a blue-print of a locomotive to which it is intended to apply this valve-gear and which is now in process of construction at the Sacramento shops of the Central Pacific Railroad. The cylinders of this engine are 21 in. diameter and 36 in. stroke. It has five pairs of driving wheels and a four-wheel truck. The driving wheels are 4 ft. 9 in. in diameter. The driving wheel base is 19 ft. 7 in., and the rigid wheel base is 14 ft. 7 in. The total weight of the engine will be 73 tons of 2,000 lbs.; weight of tender light 56,650 lbs. This, we think, will be the largest single locomotive ever built.

The Union Brass Manufacturing Company, which makes the Niles lock for passenger car doors, exhibited a case containing a great variety of patterns and designs of this lock of beautiful workmanship, some of them very elaborately decorated and intended for every class of passenger car doors including parlor, sleeping and drawing-room cars. It also exhibited a variety of ornamental butt hinges, name plates of various kinds for passenger cars and a case containing furnishings for passenger and sleeping cars in great variety. It also exhibited about three dozen different patterns of basket racks, some of them of most exquisite design and workmanship. These goods are an indication of the great improvement which has been made in the design and manufacture of such articles within the last five or ten years, and show the growth in the taste not only of the general public, but especially of railroad men during that time. The company also exhibited a section of brass railing of beautiful design and intended for railroad offices or stations and specimens of the Searle heater, of which it is the manufacturer; also the Hartley reclining and revolving chairs, for both day and night coaches, and the Wheeler drawing-room chair, which is so well known on the through line between New York and Boston. They also showed samples of the Wheeler curtain fixtures, which were first introduced on the New York, New Haven & Hartford Railroad by Mr. Wheeler, of sewing machine fame. It also exhibited specimens of castings as they appear when taken from the sand with the sprue still attached. These castings are so fine and so smooth that they are very fascinating to any one who appreciates good workmanship. It exhibited specimens of drop forgings of small dimensions used in car-work and for other purposes; also a table containing a variety of fixtures and furnishings for street cars; also a line of the Orme safety valve for stationary marine and locomotive boilers. It exhibited specimens varying from ¼ in. up to 7 in. diameter of pipe; also samples of berth curtains, with the rods,

brackets and other fixtures. If the samples of these which were exhibited were contrasted with those used ten years ago, the showing would be very much in favor of the taste of the present day.

Rand, McNally & Co., of Chicago, exhibited a variety of maps which they manufacture for advertising purposes for different railroads; also an assortment of county and section maps of the different states; new junction point and county map of the territory from the western portion of the state of Maine to the eastern portion of Dakota and Nebraska and as far south as the northern portion of Arkansas, Tennessee and North Carolina. The different systems of roads are printed in different colors. This map shows the counties, county seats, junction points and terminals, but nothing else excepting the principal rivers. They also exhibited a great variety of what are called railroad folders. These consist of advertisements which are intended to be folded up so that they can be carried in the pocket. A great deal of ingenuity is shown in the design of these, so as to make them attractive to the average public. They also exhibited what they call the "Indexed Atlas of the World" which is said to be kept up to the latest geographical information obtainable. This firm make a specialty of local and coupon ticket cases, of which they exhibited a variety; also a case of conductor's punches, and their "Perfection Dating Stamp," which may be used for stamping tickets, or by means of movable dies for ordinary office purposes, such as receipts, etc. This firm are proprietors of the *Rand & McNally Official Railway Guide*, which has become a standard in this country. They had also on exhibition Dyer's registering local ticket stamp, which consists of an apparatus by which the tickets are printed and numbered as they are sold.

Wilson, Walker & Co., Limited, of Pittsburgh, exhibited a great variety of their forgings, of which they make a specialty, including samples of Wilson's improvement on the Janney coupler; draw-heads in great variety, for freight and passenger cars; also Mr. Wilson's automatic freight-car coupler. This is arranged with a link that is fastened to the draw-head, and is all made of wrought-iron. They exhibited also samples of forged car axles, some of them bent, to show their strength, and coupling links and pins, some of which have been tested and bent in various forms, to show the quality of the iron of which they are made. Their exhibit contains samples of the Potter draw-bar, which has three pins and a fixed link attached to it; an open-mouthed draw-bar and Wilson's patent solid head draw-bar; a variety of face and follower plates for draw-bars; wrought-iron centre plates for the bolsters of cars; wrought-iron bolsters and equalizing beams for passenger car trucks, and several patterns of the Miller draw-hook and Miller and Janney couplers. This exhibit showed better, perhaps, than any other in the Exposition the great progress which is being made in the manufacture of forgings of various kinds. Some of the most difficult forms are now made up apparently without any trouble, and no part of machinery apparently can be of so complicated a form as not to be capable of being made in wrought-iron. They also exhibited locomotive truck frames, eye-bars, and a wrought-iron frame for a mogul narrow-gauge locomotive, and several different patterns of freight-car truck frames.

Carnegie Brothers & Co., Limited, of Pittsburgh, exhibited specimens of rolled steel rails, one of them twisted, while cold, into a shape like a corkscrew. They also exhibited a case containing samples of rails of different sections which they manufacture; a locomotive connecting rod bent into the form of the letter U, and another into the form of the letter S, without any signs of fracture. They also exhibited four rails which appeared to be 65 lbs. per yard, which were bent in an accident that occurred on some road, the name of which was not given; no signs of fracture were apparent in any of them. Also steel plates which were punched and flanged into somewhat the shape of a man's hat to show the strength and ductility of the material; also a floor-beam for a bridge, showing the method of connecting the parts together, samples of angle, I, channel, bridge and cruciform shapes made in steel and iron, varying in size from a 15 in. beam down to a ¾ in. channel bar; also T-iron and what they call Z-iron, which is used in the construction of the cable road in the streets of Chicago.

The Keystone Bridge Company exhibited a 60-ft. turntable with patent cone centre for locomotive engines of the heaviest type; one cone centre and one pin centre are used in each turn-table; one steel end-post for the Missouri River bridge at Blair Crossing, Nebraska. The bridge is now in course of construction at the shops of the company. The rivets are machine driven; holes reamed after punching and assembling. This post consists of two channel bars built up of plates and inclosed, the two being fastened together with lattice braces. This post is about 50 ft. long. The channels are about 15 in. deep. This company exhibited a section of buckled-plate permanent floor for bridges and buildings, a duplicate of the floor in the Franklin Square bridge in New York built by this company; also a section of a similar floor composed of rolled corrugated plates instead of buckled plates, to be used in the Madison Avenue bridge over the Harlem River, in course of construction by this company. They exhibited besides samples of steel eye-bars. In the sign over their exhibit it is stated that this company has built iron and steel bridges of the aggregate length of over 30 miles, at a cost of more than \$23,000,000. Among the most prominent constructions of this company are the steel arch of one span of 520 ft. and two spans of 502 ft. over the Mississippi River at St. Louis in a double-tracked and double-decked bridge; steel truss, two spans of 402 ft. each, over the Missouri River at Plattsmouth, Neb., the single track railway bridge of the Burlington & Missouri River Railroad; iron



truss, Ohio River bridge at Cincinnati for the Cincinnati Southern Railway, containing a channel span of 519 ft., the longest truss span in the world; an iron draw of one span of 472 ft. over Raritan Bay on the New York & Long Branch Railroad, the longest draw-span in the world.

James G. Wilson, of New York, exhibited specimens of his rolling shutters especially adapted for car windows, and also for offices, houses and other places and purposes. These are made in mahogany and white holly, and have a very neat appearance. He exhibited one specimen of a rolling shutter made in two sections, one to roll downward and which covers the lower half of the window, and the other to roll upward so as to cover the upper half. This is a very convenient arrangement, and admirably suited to adjusting the light to any required circumstances.

W. R. Ellis, of New York and Boston, exhibited samples of wrought-iron spoke car wheels, manufactured by the Patent Shaft & Axletree Company (Limited), of Wednesbury, England. One of these wheels is a wrought-iron spoke wheel, with a steel tire, the latter fastened on with retaining rings and bolts. The other is a Mansell wheel, the hub being of cast iron and the wheel-centre of Indian teak. Of the spoke wheel it is said that more than 200,000 have been running for the last 30 years in England, Canada and Australia, and in Russia and elsewhere on the continent of Europe. The tires are of Brunswick cast steel, manufactured by the Patent Shaft & Axletree Company (Limited.) The Mansell patent teak-wood car wheel, it is said, has been used under passenger cars in England for 20 years, and that more than 100,000 are now in service.

Cooper, Hewitt & Co., of New York, proprietors of the Trenton Iron Company, of Trenton, N. J., exhibited a great variety of wire of various kinds, and qualities; also samples of chain and sections of I and channel bars, angle and T iron, and best pieces of various kinds and qualities.

The Johnson Railway Car Heater Company, of Boston, exhibited one of its heaters with all the attachments and appliances.

C. W. Elliott, of Boston, exhibited Elliott's automatic sash lifter and lock. This arrangement dispenses with the old-fashioned sash lock or window latch, the bolt being attached to the lift on the inside of the sash, in either raising or lowering the window the bolt is withdrawn by the pressure on the lift. It will lock the sash in any position whenever the pressure is released from the lift.

The Cleveland Rolling Mill Company, of Cleveland, O., exhibited a great variety of steel wire, steel nails, sections of rails, shafting, car axles, crank-pins, tool steel and test pieces. Probably few persons have any idea of how many kinds of nails are now made, and would have been surprised thereat if they had examined this exhibit.

The Whitman & Barnes Manufacturing Company, of Syracuse, N. Y., exhibited the spring keys, spring cutters, and flat spring keys of which they manufacture a great variety. It exhibited these in a very neat mahogany case mounted in dark cloth, so as to show to the very best advantage. This exhibit was exceptionally neat and attractive.

A. Whitney & Sons, of Philadelphia, made a display of cast-iron car wheels of their manufacture. There is little that can be said of this exhibit except that they showed a variety of different kinds of wheels, and that the wheels appeared to be all that could be expected of them.

The Baugh Steam Forge Company, of Detroit, Mich., exhibited an assortment of coupling links and pins, Miller draw-hooks and forged car axles both finished and rough.

The Detroit Car Wheel Company exhibited samples of spoke and double-plate cast-iron wheels, also wheels for street cars, journal boxes and a locomotive cylinder casting.

The Howe Scale Company, of Rutland, Vt., of which Messrs. Borden, Selleck & Co., of Chicago are the agents, exhibited a full line of scales—wagon, depot, truck, portable and platform; also railroad trucks, baggage barrows, baggage wagons and hand cars. The truck scale is 30 tons capacity. They exhibited a small and very light hand car with steel wheels and axle and wrought-iron walking-beam, the whole structure weighing only 450 lbs.; also road-master's 4-wheel velocipede with 44-in. steel driving wheels. This is worked by levers, which can be operated both by the hands and by the feet simultaneously or separately. These levers are attached to a transverse shaft with a crank on each end. This in turn is connected to another crank on the axle of the driving wheel, so that the car is operated without gearing of any kind whatsoever. The whole weight of this car is only 150 lbs. They also exhibited 7 gold, 20 bronze and 22 silver medals, which had been received at various exhibitions of these scales, including the first one of the Paris Exposition and the first prize at the Centennial. They also exhibited a Seymour proportional scale for balancing, molder knives, planer knives, revolving cutters, etc.

The Salmon Water and Steam Heater Company, of Boston, exhibited the Salmon car heater, with all the fixtures attached; also a car heater to be placed underneath the floor of the car.

The Phoenix Steel Wire Broom and Brush Company, successors to M. C. Isaacs & Co., exhibited specimens of its boiler flue brushes, steel wire sweeping brooms, Isaacs' patent railroad track brooms and a variety of other brooms made of steel wire and intended for different purposes.

The LaFayette Car Works, of LaFayette, Ind., exhibited a hand car, track-laying car, and truck for working gangs; also cast-iron car wheels, journal boxes, brake shoes, etc.; also a patented brake-head and shoe, in which the shoe is attached to the heads without bolts or fastenings of any kind and is readily detached as soon as the shoe is cool enough to be handled; also a journal box with a patented cover, which is so arranged that it cannot be re-

moved without first taking out a bolt. Its action is similar to the Hewitt lid, but is said to have the advantage that it can be removed without taking off the arch bar.

E. J. C. Tobey, of Denver, Col., exhibited his patent wrought-iron tie. This consists of sheet-iron bent into a very flattened V form, which is laid with the point of the V down. The rail rests on a triangular wooden block which fits into the V form of the tie and rests on a suitable chair, which is held down by bolts and is also held laterally by notches cut in the tie.

Messrs. Hussey, Howe & Co., of Pittsburgh, exhibited specimens of the crucibles in which they manufacture their crucible cast-steel, with the charges contained in them. They exhibited four crucibles, one of which contained the charge after being in the furnace three-quarters of an hour, the next  $1\frac{1}{2}$  hours, showing the conversion of the iron into blister bars; the third,  $2\frac{1}{4}$  hours, and the fourth, 3 hours. Each of these crucibles was broken so as to show the exact condition of the steel in these successive periods; also a full line of the different sizes which they manufacture of round steel, spring steel, tool steel, boiler plate and fire bar steel. They exhibited a plate  $\frac{1}{2}$  in. thick with a hole 18 in. in diameter, flanged out so that the flange projected 15 in. from the plate, reducing the thickness from  $\frac{3}{4}$  to  $\frac{1}{2}$  in. on the edge, showing the ductility of this material and the facility with which it can be worked. They also exhibited some specimens of steel plate, bent and drawn out into the form of a dome-cover; others drawn into the form of a half globe, another flanged all round the edges, and a steel fire-front for boilers; also some sheets of steel used for the cutting sections of mowers and reapers, beautifully finished.

Hussey, Binns & Co., of Pittsburgh, exhibited a great variety of shovels, including scoop shovels for locomotives, also road shovels, spades, crane scoops, etc., etc. They also exhibited specimens of the ingots from which the shovels are rolled in one piece, making the patent continuous strap of the channel, thus avoiding waste in cutting away the material in order to form the straps.

E. H. Tobey also exhibited a model of a railroad grade-crossing signal. This is a very ingenious contrivance, by which the signals of one line are moved for line clear by a wrench or key, which is inserted in a sort of latch and connected by wire rope with semaphore signals on each side of crossing at any desired distance. When these signals are turned to line clear, the wrench or key cannot be withdrawn from the latch until the signals are turned back to danger. It can then be inserted in another key-hole, and the signal for the other line turned to line clear, and it is again locked in its place until the signals are turned back to danger. It is claimed for this that it is a very simple and inexpensive system of interlocking, which can be used where a more expensive one is inadmissible.

J. K. Taylor & Co., of Boston, exhibited one of Taylor's spark arresters and extended smoke-box for locomotives, which was illustrated in the *Railroad Gazette* a short time ago. This is used on a number of engines of the Old Colony and connecting roads.

The Ewald Iron Company, of St. Louis, Mo., exhibited a variety of boiler plate iron.

The Allston Car Wheel Company, of Allston, Mass., exhibited specimens of plate and spoke wheels manufactured at its works. These have a cast-steel tire, with a cast-iron centre welded to the tire. The company exhibited one pair of wheels said to have made 110,000 miles under a passenger engine on the Boston & Albany Railroad. The specimens exhibited are both double plate and spoke wheels.

The Griffin Car Wheel Company, of Detroit, Mich., the Griffin & Wells Foundry Company, of Chicago, and Thomas S. Griffin & Sons, of Buffalo, had a joint exhibit, in which they showed a variety of specimens of wheels for freight and passenger cars, locomotive trucks, locomotive driving wheels and street car wheels. They also exhibited a variety of castings, including locomotive driving boxes, cross-heads, steam chests, cylinders, cylinder-head covers and castings, centre plates, piston rings, etc.

Blackmer & Post, of St. Louis, exhibited specimens of culvert pipe, varying in size from 12 to 24 in. in diameter. We expect soon to publish an article showing the application of this pipe to the purpose for which it is intended, so will reserve further description until then.

Billings, Taylor & Co., of Cleveland, O., exhibited a variety of paints, etc., and panels finished, showing the effect of the colors.

The Calumet Iron & Steel Company exhibited samples of various sizes of nails and steel castings, including open hearth steel ingots, frog points, drawbars and coupling hooks, links for valve gear, etc.

The Hale & Kilburn Manufacturing Company, of Philadelphia, exhibited a great variety of car seats, car chairs and folding beds; a great variety of designs of both wood and iron seat ends and seats covered with plush and with rattan. Some of the seats were upholstered in concave form, and the seat is made movable so that its position is shifted when the back is reversed. Some of them are very elaborately decorated and upholstered in the most luxurious way. Their car seats indicate great improvement in form and in comfort as compared with those made and used a few years ago. Some of the chairs are made with a changeable seat and back, so that in summer a rattan cover can be substituted for the plush used in winter. They also exhibited a section for a sleeping car with their patent upper berth. The section is finished in ash, and the berth is so accurately adjusted that it can be moved with one finger. It also gives considerably more height for the lower berth than ordinary sleeping cars. They also exhibited a variety of folding beds, which are used in private cars for officers

and other parties; also reservoir desk, wash stands, and a piece of furniture which is convertible at pleasure from a wash stand into a desk, and also a variety of sizes of water coolers cased in wood and porcelain lined.

Crerar, Adams & Co., of Chicago, exhibited a large assortment of railroad supplies, which we have not room even to enumerate. The collection includes crow-bars, wrenches, hammers, axes, rail benders, copying presses, ingot copper, hand cars, switch stands, jack screws, pig lead, Babbitt metal, candles, cotton waste, bell rope, plush car seats, pulley blocks, etc., etc. A small treatise might be written on this exhibit, which indicates very forcibly the remarkable improvements which have been made in minor appliances used on railroads.

A. H. Andrews, Chicago, exhibited a great variety of office desks, office furniture, etc.

F. C. Wilson & Co., of Chicago, exhibited a variety of tin cans and oil tanks for storing oil, self-measuring pumps and water coolers.

J. A. Colby & Co., of Chicago, exhibited Cutler's patent railroad and business desks, some of which are luxurious pieces of furniture. They seem to be suited to any business and any purpose where a desk is used.

F. W. Devoe & Co., of New York, had a large booth, with a magnificent establishment of paints and colors. These include coach and car colors, special colors for railroads, freight car colors, station paints, engine colors, oxide of iron, roof, floor, bridge and trestle paints, railroad varnishes and japans, wood-fillers, hard oil finish, primers, etc., brushes for painting, varnishing, etc., etc., and door colors of great variety. They exhibited a series of panels showing the colors which are used on different railroads. They went to great expense in fitting up their booth, which was very neatly designed and showed every exhibit to great advantage.

Z. Cobb & Sons, of Chicago, exhibited different kinds of their car seats covered with rattan, plush and other material. Specimens were shown with wood and with iron seat ends. They exhibited a variety of the seat springs which they manufacture and use. These include elliptic, spiral and flat strap springs. They also exhibited a seat of which the back is operated by a double arm working in slides on the ordinary pivot. This makes it possible to get the full width of the seat back above the seat, and is a new invention which has just been introduced by this firm. The same parties exhibited seats covered with the Wakefield rattan.

The Congdon Brake Shoe Company exhibited a great variety of its patented combination shoe, which consists of a series of wrought-iron blocks cast in the face of the shoe, so that the wearing surface exposed to the shoe is exposed to a combination of both wrought and cast iron. This shoe is very well-known, and has been extensively introduced. They exhibited a variety of specimens which had been used, and which bore the mileage they had made.

Hicks & Smith, of New York, exhibited in the same booth specimens of one, two and four-light centre lamps, and one, two and three-light side lamps. These are arranged on a slide attached to the side of the car, and are movable and adjustable vertically, so that they can be placed at any desired height, and are intended for directors' cars, etc. These lamps are very elaborately decorated, and show the advance which has been made in this branch of manufacture.

E. Jennings & Co., of Chicago, exhibited a variety of curtains for windows of sleeping and drawing-room cars.

#### Foreign Railroad Notes.

The Italian government has been for some time the owner of the Italian railroads, which have been for the most part worked on short leases by the companies which formerly owned them. The final disposition of the roads is a question which has been much discussed. A bill recently introduced into the Italian Parliament proposes to lease the roads for a long period in three separate systems, one including the roads on the Mediterranean side of the Apennines, a second those on the Adriatic side, a third small system being composed of the Sicilian roads. The bill provides general standard rates on a differential basis (that is, with the rate per mile decreasing with the distance), which will be maximum rates, not to be exceeded by the lessee, and which may be modified only by a new law; but the government will preserve the right to modify the special rates. It also reserves the right to order reductions of the rate, reserving for itself the advantages or disadvantages which may result when the net profits of the lessee company fall below the amount which gives the government the right to share them.

The government reserves the right to fix the time-tables of passenger trains.

The state as lessor will receive a certain percentage of the gross earnings, and when the lessee's share exceeds a certain amount, the government will receive one-half of all the additional net earnings.

The government may order the removal of any employé of the road, for reasons connected with the public order or the operation of the road.

The lease is to be for 60 years, but at the end of each 20 years either party to the lease may require it to be given up.

The Prussian Ministry of Public Works publishes a bi-monthly review, "Archiv für Eisenbahnwesen" (*Railroad Archives*), which aims to give a sketch of the general course of railroad politics throughout the world, and has many valuable articles. That its reports of matters in foreign countries are not always accurate, however, may be judged by the manner in which it introduces an abstract of the report of the Advisory Commission which was appointed by



the trunk lines last year to report upon the proper differences in rates between the West and the four Eastern seaports. Dr. von der Leyen, the editor, has transformed ex-Senator Thurman, the late Minister to France and ex-Congressman Washburne and Judge Cooley into "three eminent English railroad men," and says that they were invited "to visit the United States" to investigate the matter. Their report, he says, after having been made to the railroad companies here, "was also submitted by them to the English government, and by it laid before both Houses of Parliament!" He then proceeds to make some extracts from this "report of English railroad experts on American railroad affairs," and heads the article "An English Report on American Railroad Tariffs." The trouble is that Dr. von der Leyen did not read his *Railroad Gazette* with sufficient care last July, and when he found the report of Messrs. Thurman, Washburne and Cooley copied as an illustrative document in the Report of the British Parliamentary Committee on Rates, he accounted for it by transforming three American lawyers, judges and statesmen, innocent of railroad experience, into eminent English railroad experts. "It is encouraging," says he, after quoting from the report, "to see that the Englishmen, after careful investigation of all the circumstances, see so clearly the great evils under which railroad affairs suffer in the United States, and that they declare their opinion so frankly and decidedly. Whether the good advice which they give the powerful railroad kings, their special indication of the obligations of the railroads as public institutions, will have practical effect, seems under the present circumstances at least doubtful."

A Mr. M. W. Eddy has published in French a comparison of English and French railroad employes, taking his data from an English company which employs 11,000 men, and a French company with 23,000.

In France no one enters the service under 20 or over 35, and each is examined by a physician on applying for employment. The numbers of applications in different years were:

1875.	1877.	1879.	1882.
1,745	2,625	3,510	4,700

The examination is free in France; in England it costs the applicant 60 cents. Mr. Eddy says the wages are higher in France than in England, which is contrary to the received opinion. A locomotive engineman he reports to receive \$740 to \$1,068 a year in France; in England, \$612 to \$795. The French fireman gets \$398 to \$503, the English one \$351 to \$519. Further, the English employes are not paid for the days when they do not work; but in France the man is engaged and paid by the year. In both countries an additional payment is made when the service requires the men to work and sleep away from home, in England 50 cents to \$1.50 for 24 hours, in France 75 cents for engine-men and 65 for firemen. In both countries premiums are given for saving coal, for running over given distances without important repairs, and payments for delays without their fault. Guards and road-watchmen get \$260 to \$370 a year in France; \$270 to \$390 in England. In France an addition of \$10 is made to the salary for every two years' service.

If an employe is discharged he receives pay for two to six weeks afterwards in France, and if it is by reason of sickness the employe gets half pay for three months. In England one to two weeks' notice of dismissal is given.

In France the employe rides free over the whole road and members of his family pay but one-tenth of the regular price, and on other roads the employe pays one-fourth the regular fare. There are no such favors given in England.

In France the employe may resign when he is 55 and has been in the service 25 years and draws half his average pay for the last six years, if the pension does not exceed \$1,200 a year. In England the employe is entitled to a pension if he has contributed to the pension fund for 10 years; but ordinarily not till he is 60. If he leaves the service earlier, his contributions to the pension fund are paid back to him. When he is 60 and has served 35 years, his pension amounts to half his average yearly wages during the whole term of his service. His widow and children get nothing, but in France a widow who was for three years the wife of an employe 15 years in service gets half of his pension, and in case of her death his children get half of her pension until they are 18. In both countries there are sick funds; but in France alone is there a sort of co-operative supply association, which provides the employes with all kinds of supplies at low prices.

#### The Pratt & Whitney Company's Exhibit at the Chicago Exposition of Railway Appliances.

We give this week on a double-page plate a series of illustrations showing different patterns of machine tools exhibited by the Pratt & Whitney Company at Chicago. A description would aid little in making their construction clearer to the reader than the engravings show it. The illustrations are therefore given without further description.

The same company also exhibited a full assortment of cylindrical, screw and other gauges, the manufacture of which it makes a specialty, and in which its work is unrivalled. Some reference to the use of these gauges will be found on the editorial page.

#### THE SCRAP HEAP.

##### The Rail Market.

**Steel Rails.**—The *Iron Age* says: "There is no change whatever. Buyers for winter and spring are disposed to take their chance of the market, and, as the mills are full of work for summer, neither party seems inclined to force

business. Summer deliveries in lots of 500 to 1000 tons each command \$38 to \$39 at mill, and although \$38.50 is bid for large lots, winter delivery, sellers at the moment are not prepared to go much below \$38, although it is believed that sales have been made at \$37 to \$37.50."

**Rail Fastenings.**—Spikes are quoted at \$2.60 per 100 lbs. in Pittsburgh, with fair demand. Track-bolts are quoted at \$3 to \$3.25 per 100 lbs., and splice-bars 2 cents per pound.

**Old Rails.**—Old iron rails are quoted at \$21 to \$22 per ton at tidewater, with a somewhat better demand, and holders are firmer.

##### A Slow Trip.

On the branch of the Iron Mountain road from Neelyville to Doniphan, Mo., 21 miles long, the passenger train on Saturday morning last was only nine hours behind time, having been over 10 hours making the trip. There had been a little tornado the night before, and on its way the train encountered no less than 91 trees blown down across the track. Most of them were oaks, some 2½ feet in diameter and over, and the road had to be chopped out. A Missouri tornado is worse than a New England snow-storm.

##### Fast Time.

A special train left Syracuse, N. Y., on the Syracuse, Binghamton & New York road on the afternoon of July 12, and, it is claimed, made the run of 79 miles to Binghamton in 83 minutes, making one stop for water. This is at the rate of 57.11 miles an hour. The train consisted of locomotive No. 6 and two passenger cars, and had several of the officers of the road on board.

##### A Train-Wrecker's Destructive Work.

A dispatch from Knoxville, Tenn., July 18, says: "An East Tennessee, Virginia & Georgia express train was thrown from the main track this morning by a misplaced switch at the zinc works, one mile east of this city. The train was running at full speed and struck four coal cars on the side track, demolishing them. The engine jumped the track and ran into the main building of the works just erected by the East Tennessee Valley Zinc Co., tearing away the whole side of the building. The locomotive struck the stationary engine of the Zinc Co., demolishing it completely. The locomotive and tender were overturned. The mail car was torn to pieces, and the express car was damaged. The damage to the railroad company is about \$10,000, and to the zinc company about \$6,000. The railroad company offers a large reward for the apprehension of the person who broke the lock and changed the switch."

## General Railroad News.

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:

*Atlanta & West Point*, annual meeting, in Atlanta, Ga., July 25.

*Rutland*, annual meeting, at the office in Rutland, Vt., July 31.

#### Dividends.

Dividends have been declared as follows:

*Canadian Pacific*, 2½ per cent., semi-annual, payable Aug. 17. Transfer books close July 31.

*Central Pacific*, 3 per cent., semi-annual, payable Aug. 1. Transfer books close July 16.

#### Railroad and Technical Conventions.

The *General Baggage Agents' Association* will hold its next semi-annual meeting at the Tremont House, Chicago, Aug. 8.

The *International Association of Traveling Passenger Agents* will hold its annual convention in Detroit, Mich., Aug. 15.

The *Road-Masters' Association of America* will hold its first regular meeting in St. Paul, Minn., Sept. 12.

The *Master Car-Painters' Association* will hold its annual convention in Baltimore, Sept. 19.

The *New England Road-Masters' Association* will hold its first annual meeting in Boston, Sept. 20.

The *American Street Railway Association* will hold its next meeting in Chicago, Oct. 9.

The *General Time Convention* will hold its fall meeting at the Grand Pacific Hotel in Chicago, Oct. 11.

The *Southern Time Convention* will hold its fall meeting at No. 46 Bond street, New York, Oct. 17.

The *American Association of Railroad Superintendents* will hold its fall meeting in Washington, Oct. 23.

#### Joint Executive Committee.

A meeting of the Joint Executive is to be held at Commissioner Fink's office in New York, beginning on Thursday, July 26. The principal business to come before the committee is the admission of new roads. The Passenger Department will meet July 24.

#### New York Railroad Commission.

The New York Railroad Commissioners gave a public hearing on the *pro rata* freight bill, which was referred by the Legislature to the Commission, on July 17. At this hearing a number of persons appeared and presented arguments against the bill. This was the second hearing, the first having been held July 3; a third will be held shortly.

#### Kansas Railroad Commission.

The Kansas Railroad Commissioners have begun a series of hearings at various points in the state, to investigate complaints that have been made. Last week a meeting was held at Beloit, where charges of extortionate rates and of discrimination in rates had been presented against the Missouri Pacific and the Union Pacific companies.

#### Massachusetts Railroad Commission.

The Massachusetts Railroad Commissioners gave a public hearing in Boston, July 16, on the subject of safety signals at highway crossings. Representatives of the Union Switch Signal, the American Signal, the Maneto Signal, the American Pneumatic and other signal companies were present, but offered no testimony regarding their appliances. They, however, extended invitations to the Commissioners to examine their signals in practical operation at their convenience, which will be done. The hearing adjourned to Oct. 30.

### ELECTIONS AND APPOINTMENTS.

**Adams Express.**—Mr. J. H. Rigney has been appointed Superintendent of the Pennsylvania Division of this company's lines, in place of Frederick Lovejoy, resigned. Mr. Rigney has been with the company for 21 years.

**American Midland.**—The directors of this new company are: James Cox, Hon. H. Harris, Charles H. Ledlie, L. B. Morrison, Irving Ward. Office in Fort Wayne, Indiana.

**Austin & Northwestern.**—At the annual meeting in Austin, July 10, the following directors were chosen: J. T. Breckenridge, Leander Brown, E. Christian, A. L. Rhomburg, A. P. Wooldridge, Austin, Tex.; W. H. Westfall, Burnett, Tex.; J. A. Rhomburg, W. G. Walters, Dubuque, Ia.; F. T. Walker, Cedar Rapids, Iowa.

**Belleville & Centralia.**—The directors of this new company are: Stephen M. Warner, Centralia, Ill.; Henry Davis, Russell Hinckley, Marshall W. Weir, Belleville, Ill.; D. P. Alexander, Wichita, Kan.; H. A. Alexander, Kansas City, Mo.; L. E. Alexander, St. Louis.

**Chattahoochee.**—At the annual meeting in Ashland, Ky., July 12, the following directors were chosen: George S. Richardson, Ashland, Ky.; George M. Carlisle, W. A. Goodwin, George T. Stedman, Cincinnati; James C. Holden, Josiah J. White, George C. Wood, New York. The board elected George T. Stedman President; George S. Richardson, Vice-President; George M. Carlisle, Secretary.

**Chicago & West Michigan.**—Mr. C. Harris having resigned the position of Superintendent and Chief Engineer, all communications heretofore sent to him should be addressed to George L. Kimball, General Manager.

**Fargo Southern.**—The officers of this new company are: President, L. K. Hubbard; Vice-President and General Manager, W. A. Kindred; Secretary, N. Edwards; Treasurer, Charles Sweet. Office in Fargo, Dakota.

**Fremont & Central Nebraska.**—The directors of this new company are: Edward Barnard, J. J. Hawthorne, Alfred F. Hopkins, Lewis M. Keene, W. V. Munger, L. D. Richards. Office in Fremont, Nebraska.

**Indianapolis Union.**—Mr. V. T. Malott has been chosen Vice-President and General Manager of this company, which also leases the Indianapolis Belt road. Mr. Malott was General Manager of the Indianapolis, Peru & Chicago road until it was transferred to the Wabash.

**Lake Erie & Western.**—Vice-President J. H. Cheney announces that the following assignment of officers has been made: D. S. Hill, General Superintendent; W. S. Weed, General Freight Agent; G. W. Smith, General Passenger Agent; A. J. Castater, Auditor and Assistant Secretary; T. H. Perry, Chief Engineer and Purchasing Agent; H. L. Cooper, Superintendent of Equipment; W. E. Hackedorf, General Attorney; W. P. Jenkins, Traveling Freight Agent.

**Lehigh Valley.**—Mr. Wm. C. Alderson has been chosen Treasurer of this company, in place of Lloyd Chamberlain, deceased.

**Louisville, New Albany & Chicago.**—Mr. John McLeod has resumed the office of General Superintendent of this road, which he resigned a short time ago to accept that of General Manager of the Indianapolis Union road.

A circular from Mr. McLeod announces that the offices of Superintendent of Transportation and Train-Master are abolished. W. G. Sala is appointed Division Superintendent of the Northern Division, embracing the Chicago & Indianapolis Air-Line and that portion of the main line north of LaFayette, with headquarters at Chicago. W. N. Marshall is appointed Division Superintendent of the Southern Division, embracing that portion of the main line between Louisville and LaFayette, and the LaFayette yard, with headquarters at New Albany, Ind. Car mileage to be reported to G. C. Breed, Auditor, Louisville, Ky.

**Missouri Pacific.**—Mr. W. W. Fagan has been appointed Superintendent of the Western Division, with office at Kansas City, Mo., to date from Aug. 1, in place of C. L. Dunham, resigned. Mr. Fagan is now Superintendent of the Central Branch Division.

**Nantasket Beach.**—Mr. Starks Whiton has been appointed General Ticket Agent and Cashier.

**Niagara Falls & Clifton Suspension Bridge Co.**—This company last week elected the following directors: James J. Belden, Warren Bryant, John M. Hutchinson, Samuel B. Johnson, Charles H. Smyth. The board re-elected James J. Belden President; Charles H. Smyth, Vice-President and Treasurer; J. M. Bostwick, Secretary.

**Northern Pacific Express Co.**—The directors of this new company are: Edward D. Adams, Ashbel H. Barney, Frederick Billings, Benjamin P. Cheney, Wm. Endicott, Jr., Henry L. Higginson, Thomas F. Oakes.

**Oregon Railway & Navigation Co.**—Mr. E. P. Rogers has been appointed General Passenger Agent. He has been for several years General Agent of the Oregon & California road.

**Pittsburgh, Cincinnati & St. Louis.**—Mr. J. W. Milligan has been appointed Cashier of the Little Miami Division in place of G. A. Davenport, resigned. Mr. O. W. Stout succeeds Mr. Milligan as Chief Clerk of the Freight Department.

**Rome.**—At the annual meeting in Rome, Ga., July 12, the following directors were chosen: D. B. Hamilton, Eben Hillyer, George Hillyer, D. M. Hoop, S. S. Johnson, Daniel S. Printup, W. G. Raoul. The board re-elected Eben Hillyer President.

**Somerset.**—At the annual meeting in Oakland, Me., July 11, the following directors were chosen: John Ayer, Wm. H. Brown, Reuben B. Dunn, Francis W. Hill, George E. B. Jackson, Stephen D. Lindsay, Albert Moore, Edward Rowe, Sumner S. Thompson, Calvin Walker, Nathan Weston.

**Texas State Engineer.**—The Governor of Texas has appointed Mr. James H. Britton, of Sherman, State Engineer under the new law. Mr. Britton is said to be an engineer of much experience.

**Toledo, Ann Arbor & Grand Trunk.**—Mr. J. M. Sterling has been appointed Chief Engineer. He was formerly on the Detroit Division of the Walash road.

**Utica & Black River.**—Mr. J. F. Maynard, for several years Vice-President and General Superintendent of this road, has been chosen Vice-President and General Manager, to date from Aug. 1. The position of General Manager is a new one on this road.

Mr. E. A. Van Horne has been appointed Superintendent, to succeed Mr. Maynard. Mr. Van Horne has been for several years General Superintendent of the Rome, Watertown & Ogdensburg road.

**Vicksburg & Meridian.**—At the annual meeting, July 16, the following directors were chosen: George Arents, Edward R. Bacon, D. Graff, Frederick Muller, Otto Plock, John Scott, Alfred Slidell. The board re-elected Otto Plock President; John Scott, Vice-President; D. Graff, Secretary.

**Vincennes & Ohio River.**—The directors of this new company have elected Albert Netter President; George F. Montgomery, Vice-President; N. F. Dalton, Secretary; Hiram A. Foulks, Treasurer. Office in Vincennes, Indiana.



### Grain Movement.

**Belleville and Centralia.**—This company has been organized to build a railroad from Belleville, Ill., east to Centralia on the Illinois Central, a distance of about 50 miles.

**Canadian Pacific.**—On the Lake Superior Division track is now laid from Port Arthur 14 miles. Tracklaying has also been begun from Nepigon westward, and the grading is finished for 87 miles.



**Cape Tormentine.**—Messrs. Gray & Wheaton, contractors for this road, have a force of 300 men at work on the grading from Sackville, N. B., to Cape Tormentine, and the force is to be increased.

**Central, of Georgia.**—This company makes the following statement for the month of June:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$150,500	\$128,754	I. \$21,746	16.9
Expenses.....	156,804	152,594	I. 3,210	2.1
Deficit.....	\$6,304	\$23,840	D. \$17,536	73.1

This is the season of light earnings on this road, and there is generally a deficit for several months, which is more than made up in the busy season.

**Central Pacific.**—Work on the extension of the Oregon Division from Redding, Cal., northward is at a standstill, on account of the strike of a large number of Chinese laborers, who demand an increase from \$1 to \$1.25 per day. It is said that they have supplies for a month, and are determined not to give in. The strike comes at a bad time, as there is much work on this division which cannot be carried on through the winter.

It is said that a new line for this extension is to be run, leaving the present survey about 20 miles north of Redding.

**Chesapeake & Ohio.**—It is said that this company has decided to build the extension of its Elizabeth, Lexington & Big Sandy line from the present terminus at Lexington, Ky., west by south to Elizabethtown on the Chesapeake, Ohio & Southwestern road, a distance of about 85 miles. Surveys have already been made for this line. This action is taken on account of the many difficulties interposed by property owners in Louisville to the completion of the connecting line in Louisville between the Chesapeake, Ohio & Southwestern and the Short Line tracks, which this company now uses from Lexington to Louisville. Another cause is said to be the very high price asked for the land which the company wants for its yards and stations in Louisville. Several injunctions have lately been served out by property owners against the construction of the connecting track, and all work upon it has been suspended for the present.

**Chicago, Burlington & Quincy.**—The new 5 per cent. bonds issued for the purchase of Hannibal & St. Joseph stock are now ready for delivery at the Bank of Commerce in New York, and will be issued on surrender of the temporary certificates at first given to holders.

**Chicago, Milwaukee & St. Paul.**—An officer of this company writes to the *Chicago Tribune* as follows in relation to the Barnes suit against the company:

"Your special from Milwaukee of June 30, entitled 'A Noted Case,' did not come to my notice until a day or two since, and as some of its statements are grossly incorrect and may injuriously affect the Chicago, Milwaukee & St. Paul property with those unacquainted with the facts, I have deemed it proper to correct them. Your special states that nearly or quite \$20,000,000 is involved in the controversy. The suit is brought to foreclose a mortgage given by the La Crosse Co. in 1858 for \$2,000,000. In the progress already made in this case the Court has decided that \$648,200 of the bonds purporting to be secured by the mortgage were never issued by the company, and never became a lien upon the property; which would make the total amount originally secured by the mortgage \$1,351,800. The Court, by its decretal order made April 21, 1882, also decided that, of this \$1,351,800, \$1,097,600 were canceled by being exchanged into the stock of the Milwaukee & Minnesota Railroad Co., which was formed by Barnes, the Trustee, and the bondholders on his foreclosure of this same mortgage in 1879, and that said bonds could not be the subject of further litigation in this suit; leaving \$259,200 of said bonds which could by any possibility be the subject of further controversy in this suit; and at the same time the Court ordered that the holders of the \$259,200 of bonds might file their claims with the Clerk of the Court on or before July 1, 1882, and that all claimants under said mortgage whose claims were not filed with the Clerk by that time should be forever barred and foreclosed of all right, claim or equity under said mortgage, and that the claims filed should be referred to a special master to take testimony in relation to them and report to the Court. Only \$21,500 in amount of principal of said bonds were so filed, and by the decree as it now stands only that amount, with interest since 1858, is involved in this noted case. The master reported that these \$21,500 of bonds were secured by the mortgage, and that they were owned by the parties presenting them, and the question before the Court at its late session was whether this amount is in equity a lien upon the mortgaged property. You will therefore see that instead of \$20,000,000, as stated in your special, less than \$100,000 is now involved in the controversy in this Court. This suit was commenced in June, 1878."

A contract has been let to O'Hara Brothers, of Cedar Rapids, Ia., to build an extension of the Southern Minnesota Division from its present terminus at Howard, Dak., west to Forestburg on the James River line, a distance of about 40 miles. Work is to be begun at once and finished this season.

It is said that work will be begun shortly on the branch line from Cedar Rapids, Ia., to Sigourney and Ottumwa. The grading will be done this season, but it is not expected that track will be laid this year.

**Chicago, St. Louis & Pittsburgh.**—This company has completed a second track from Richmond, Ind., to New Paris, 6 miles, where the road is used by the trains of the Little Miami road also.

A contract has been let to Peter Routier, of Indianapolis, to build the new shops in that city, which are to cost about \$160,000.

**Chicago & Western Indiana.**—This company offers for subscription, through Drexel, Morgan & Co., of New York, and Drexel & Co., of Philadelphia, \$7,200,000 new 6 per cent. bonds, having 50 years to run. The total issue authorized is \$10,500,000, of which \$3,300,000 are reserved to pay prior issues of bonds. The company owns a line into Chicago from the south, with a belt line around the city and extensive terminal grounds, yards, stations, elevators, etc. The road is used as an entrance into Chicago by six lines, and the rentals paid for its use considerably exceed the interest charges on all the bonds issued and authorized.

**Cincinnati, Hamilton & Dayton.**—A beginning has been made on the proposed branch or loop line from Troy, O., to Piqua, by laying track through the town of Piqua. It is thought that this has been done for the purpose of keeping out the proposed Miami Valley road.

**Delaware, Lackawanna & Western.**—A meeting was held in Buffalo, July 14, to make arrangements for a through line between New York and Chicago over this road, the Grand Trunk and the new Grand Trunk-Wabash line between Detroit and Chicago. The route and distances are by the Lackawanna line from New York to Buffalo, 414 miles; the Grand Trunk from Buffalo to Detroit, 238 miles; the Wabash from Detroit to Auburn Junction, 133 miles; and the Baltimore & Ohio from Auburn Junction to Chi-

cago, 146 miles. The total distance between Chicago and New York by this line will thus be 931 miles, or only 19 miles more than by the Pennsylvania's shortest line.

It is said that an issue of \$5,000,000 construction or second-mortgage 5 per cent. bonds on the leased New York, Lackawanna & Western road will soon be authorized. These bonds will be issued as required, a part of them being used to pay for terminal facilities in Buffalo. No official announcement of the issue has been made.

**Denver & New Orleans.**—It is reported that this company has made a contract to lease its road for one year to a syndicate of business men in Denver.

**Eastern.**—The *Boston Advertiser* of July 17 says: "The recent purchase by the Eastern Railroad of a large tract of land in East Boston for wharf and ferry purposes, already mentioned in this column, is said to be part of a great scheme, under consideration for some time by the officers of that railroad and of the New York & New England, for a through fast all-rail line from Washington to St. John and Halifax. The New York & New England Railroad Co. now has, as is well known, a through Washington express train, and the single break now existing between Washington and St. John is in this city. The present scheme of avoiding this and taking not only passengers but also freight trains through by transfer steamer from the New York and New England Co.'s wharves to those of the Eastern Co. in East Boston is to be carried out by the New England Lighterage Co., a corporation recently organized by New York and Boston capitalists, under the laws of New Jersey. It has for its object not only the transportation of passengers between the wharves of the two railroad companies in question, but also the transfer of freight in bulk. It is capitalized for \$250,000, nearly all of which has been subscribed. Contracts have been made with both the railroad corporations, and the New York & New England Co. is now making arrangements to fit one of its wharves with the appliances necessary to the transferring of its cars to the boats of the lighterage company. The Eastern people will also, just as soon as possible, build a slip on the land recently purchased at their East Boston terminus. Indeed, their improvements at this point last year, which cost the company about \$112,000, and by which it has secured for itself first-class wharfage facilities, were made, it is now understood, with the establishment of this connection in view. The Lighterage Co. will put on as many boats as shall be found necessary, and will also build a number of floating elevators, and be able to mix and screen grain for export, a thing that it has been impossible to do heretofore in Boston. The company's elevators, one of which is at present in process of construction, and about complete, at New York, will cost not far from \$60,000 each. The details of the new arrangement are now being perfected, and it is hoped, as noted above, to have it in full working order at an early date. The running of through passenger trains will not, however, it is understood, be undertaken until the new bridge at St. John is completed."

**Fargo & St. Louis Air Line.**—This projected road is to run from Fargo, Dak., southward through Wahpeton and Brides Sioux to Lake Traverse, and thence southeast across Minnesota to Fort Dodge, Ia. The line as projected is about 350 miles long; from present appearances a few miles from Fargo southward may be built.

**Farmington & Carrabassett.**—Surveys have been completed for this road from Farmington, Me., the terminus of a branch of the Maine Central road, northward through New Vineyard and New Portland to Kingfield. The distance is about 25 miles, through a very good country. The towns on the line are expected to subscribe to the stock.

**Fort Worth & Denver.**—Work will soon be begun on the extension of this road from the present terminus at Wichita Falls, Tex., northward to the Red River, about 100 miles.

**Fremont & Central Nebraska.**—This company has been organized to build a railroad from Fremont, Neb., westward to a point on the Omaha, Niobrara & Black Hills Branch of the Union Pacific, between Lost Creek and Madison. The distance is about 60 miles, and the line is generally parallel to and north of the Union Pacific main line.

**Galveston, Houston & Henderson.**—A Galveston dispatch of July 18 says that negotiations are in progress for running the trains of the Galveston, Harrisburg & San Antonio road over this road to Galveston, making that port the terminus of the road instead of Houston.

**Hartford & Harlem.**—The Connecticut Railroad Commissioners have granted a hearing in the matter of the location of this proposed road through New Haven. The location as adopted is opposed by many owners of property in the city.

**Highland Junction.**—This company, which proposes to build a railroad from near Poughkeepsie, N. Y., to a point west of Newburg, including a bridge over the Hudson, has voted to issue \$5,000,000 in bonds for the purpose of building the road. The company has not yet obtained the necessary authority to build the bridge.

**Illinois Central.**—On the Yazoo & Mississippi Valley Branch of this company's Southern Division, the grading is now nearly completed from Canton, Miss., west by north to Yazoo City, 35 miles. Track has been laid for 8 miles, and the work is progressing steadily.

Work is also progressing well on the Canton, Aberdeen & Nashville Branch, from Canton northeast.

**Ithaca & Alma.**—This road is now completed and trains have begun to run regularly over it. It is 8 miles long, extending from the town of Ithaca, in Gratiot County, Mich., northward to Alma, on the Chicago, Saginaw & Canada road.

**Kansas City & Southern.**—This road is now completed to Grand River, Mo., 6 miles southward from the late terminus at Jordan Springs, and 10 miles from Clinton, the junction with the Missouri, Kansas & Texas road. Work is in progress from Grand River to Osceola, 16 miles. The road is built on the old road-bed graded for the Kansas City, Memphis & Mobile Co. some 12 years ago.

**Kootenai.**—This company has been organized to build a railroad from Victoria, in British Columbia, to the Kootenai River, for the purpose of promoting local traffic and settlement.

**Little Rock, Mississippi River & Texas.**—This company recently brought suit against the St. Louis, Iron Mountain & Southern Co. to recover damages and prevent further discrimination. It was charged that the Iron Mountain charged this company \$12 per car for all cars hauled over the bridge over the Arkansas River between Baring Cross and Little Rock, which was just twice the rate charged to others. The Iron Mountain has now reduced the rate to \$6 per car, and the suit has been withdrawn.

**Long Island.**—The New York Supreme Court has decided that this company is not liable to the Stewart estate for back rental of the Garden City road, which it holds as

lessee of the Flushing, North Shore & Central road. The amount claimed was about \$75,000 in all.

**Maine Shore Line.**—The *Boston Advertiser* says: "The details of the plan by which the necessary funds for the building of this road will be raised have just been completed, and are substantially as follows: The Maine Central Co. having leased the Shore Line from Bangor to Sullivan agrees to pay 8 per cent. interest on the \$750,000 which its construction will cost; 1 per cent. of this to go to create a sinking fund which in the term of 40 years will extinguish the sum above named, at which time, the principal and interest having been duly discharged, the Maine Central comes into absolute ownership of the road. To raise the necessary funds, a plan has been adopted similar to that by which several Western railroads have been built, where they have been leased by other corporations prior to their construction. The Maine Central will issue its own notes or bonds for \$750,000 at 5 per cent. interest. These bonds are now being prepared in New York, and will soon be placed upon the market. The \$750,000 of bonds issued by the Shore Line Railroad will be placed in the hands of some strong trust company as collateral security for the like amount issued by the Maine Central. The latter corporation will pay to the trust company the 1 per cent. which is to go to create the sinking fund for the extinguishment of the original bonds of the Shore Line. When this debt, principal and interest, has been discharged according to the terms of the lease, as above stated, the Shore Line comes into absolute ownership, and becomes an integral part of the Maine Central. The stock of the Shore Line will, of course, be only valuable as an evidence of the public spirit of the original subscribers thereto."

**Marietta & North Georgia.**—Track on this road is now laid to Marble Cliff, Ga., 6 miles beyond the late terminus at Talking Rock, and 69 miles from Marietta. Trains are run through to Marble Cliff. About 6 miles remain to complete the road to Ellijay, the county seat of Gilmer County.

**Maryland Central.**—A contract has been let to McCabe Brothers for the extension from Belair, Md., to Delta, Pa., the work to be finished in four months. Part of the grading on this section was done some time ago, but all the masonry and trestle-work are still to be finished.

**Memphis, Selma & Brunswick.**—Track is reported laid on this road from Holly Springs, Miss., westward to By-halla, about 18 miles. Work has been suspended on account of trouble with the contractors, and it is uncertain when it will be resumed.

**Mexican Central.**—The *Mexican Financier* says: "The line of the Mexican Central is located as far north as Fresnillo, about 40 miles from Zacatecas."

It is believed probable that the Mexican Central will reach the city of Aguascalientes in July. The grading is finished and the bridge building well under way, so that as soon as the great bridge at Encarnacion is finished the work of track-laying will be pushed forward without interruption.

The Mexican Central is pushing the work on all its divisions. A call has been issued for 5,000 laborers on the Tampico line, and it looks as if, by the way in which the building of the line is going on, the company expected to make a profitable use of it and of the port of Tampico at an early day. Superintendent Robinson, of the Northern Division, on his return to Paso del Norte from this city said of the country between the end of the tracks: "It is one of the finest regions over which I have ever traveled. Humboldt's unstinted praise of the Mexican table-land region meets its fullest justification in such a journey. For railroad purposes it is almost unsurpassed. There are no great engineering difficulties, no heavy grades, and not a single tunnel on the route; timber is not plentiful, but stone is abundant. The agricultural and mineral resources of the country are simply marvelous. The weather was superb throughout the whole journey. We camped out a number of times, having our own team, but found comfortable accommodation when needed. We were treated everywhere with great courtesy. The Villa Lardo is in the midst of a great and improving cotton region; it is a distributing point, also, for the famous Laguna Co. Mapima is also another prosperous city, the centre of a remarkable mining region. Affairs on the Northern Division are in capital condition. We have six complete contracting outfits at work, and we are able to and will construct at the rate of 1½ miles per day. The bridge and culvert material is all on hand, and the work will be driven to the utmost."

**Mexican Railroad Notes.**—The following notes are from the *Mexican Financier* of recent date:

The inspector of the railway from Merida to Valladolid has recommended the acceptance of kilometers 17, 18, 19 and 20.

Saltito will probably be in communication with Laredo and the United States by the Mexican National Railway next month.

The Puebla & Izucar de Matamoros Railway carried 13,452 passengers in May from Puebla and Santa Maria Acuxcomac to San Agustín.

The railroad from Puebla to San Juan de los Llanos has a length of 0.93 kilometers, and has seven stations. The operation of the road began on March 20.

The President has authorized the extension of the Merida & Peto Railway as far as Sotuta, with two branches; one from Tacoh to Tekit and the other from Ticul to Maxcanu.

The inspector of the International Railway from Piedras Negras reports that the road is so well constructed that he recommends the acceptance by the Government of the entire 95 kilometers which he has examined, simply with the condition that at a later day the quality of the ballast be improved.

The railway projected between Potrero and Cedral in the state of San Luis Potosí will, according to the *Siglo*, benefit the country to the northward of the capital of that state, including Catorce, Matehuala, Charcas and Venado. It is a region of extensive farms and cattle ranches, and the road will touch important mineral points. The latter will be particularly benefited, for many mines have been abandoned, not on account of a lack of rich ores, but because of the cost of getting the ores to reduction works. The road will be a feeder of the Mexican National.

**Michigan & Ohio.**—Track is laid to Marshall, Mich., 22 miles eastward from the late terminus at Augusta, and 55 miles from the crossing of the Grand Rapids & Indiana at Allegan. Work is progressing steadily on the road.

**New Castle & Sharpville.**—This company has been organized to build a railroad from New Castle, Pa., to Wilmington Junction, about 10 miles. The capital stock is \$200,000.

**New Hampshire Railroad Law.**—A Boston correspondent in Concord, N. H., writes as follows of the general law intended to permit the consolidation of the Concord and other companies:

"The railroad contest in New Hampshire has been rather eclipsed in public notice by the senatorial fight, but the interest in the questions involved has not abated on the part



those concerned. A gentleman whose opportunities for judging are of the best, and who has been at Concord during the week as a close spectator, says that an accurate canvass of the lower house of the Legislature now, in his judgment, would show that the Colby bill is dead. What the showing would be a month hence, should the session be prolonged, no one can tell. A greater amount of opposition has been developed than was expected, but the friends of the bill, headed by President Sherburne of the Northern road, are united, confident and well equipped with men, funds and materials for an active campaign. A very large lobby in their interest is on the ground, and every possible argument and influence is being brought to bear upon the legislators to secure the success of the scheme. Woman's influence, this gentleman says, is being enlisted, and every man's foible is being appealed to in support of the measure. The statement has been made that the Democrats in the Legislature will generally oppose the Colby bill, and during the early part of the session the rallying cry was 'Rollins and consolidation.' Now that Rollins is out of the fight and Chandler leads the Republican column, the cry will hardly be 'Chandler and consolidation.' Mr. Chandler has put himself on record too distinctly for that. Should Mr. Chandler's prospects of success in the senatorial contest continue favorable, the same authority believes that he will keep pretty quiet on the railway question, but should he be defeated for the senatorship, he will be very apt to turn all his energies to the purpose of defeating the bill. The railroads which are actively moving in behalf of the Colby bill, the Concord, Northern and Boston, Concord & Montreal, are being strongly antagonized in this matter by the friends of the projected new railroads and branches, who assert that under the provisions of this bill any construction of new lines which might be opposed by any powerful corporation would be virtually impossible for ten years to come. Hence the supporters of the projected Lake Shore and Forest Line roads and others are bitterly opposed to it on these grounds. The Boston & Lowell Railroad would heartily support any general railway law similar in its provisions to that of Massachusetts, but opposed the Colby bill on the grounds above named, and also because the bill permits the unlimited watering of stock by the consolidated companies. The upshot of the whole matter, says this informant, is very likely to be no action whatever.

**New York Central & Hudson River.**—The New York Tribune publishes, "from a trustworthy but not official source," the following statement of the operations of this road for the eight months of its fiscal year from Oct. 1 to May 31:

	1882-83.	1881-82.	Increase.	P. c.
Earnings .....	\$22,570,000	\$19,114,000	\$3,456,000	18.1
Expenses .....	15,120,000	13,325,000	1,795,000	9.4
Net earnings .....	\$7,450,000	\$5,789,000	\$1,661,000	40.8
Fixed charges (estimated) .....	3,584,416	3,458,416		
Surplus .....	\$3,865,584	\$2,330,584	\$1,535,000	118.0

Assuming this statement to be correct, the surplus for the eight months is 4.46 per cent. on the stock; the proportion for the eight months of the dividends paid is 5.33 per cent. The fixed charges have probably been somewhat larger this year than last.

**New York, Lake Erie & Western.**—An application has been made to the Attorney-General of Pennsylvania to bring a suit against this company in *quo warranto* to ascertain by what right it holds coal lands in Pennsylvania and has built a railroad to reach them. The application is made by C. R. Early and others, who own coal lands adjoining those of the company. The Attorney General has not yet given his decision.

In the company's suit against James McHenry, in which it secured some three months ago a judgment for \$1,496,824, the United States Circuit Court in New York has refused a motion of McHenry's counsel for a new trial. In the Court's decision reference is made to the fact that the highest court in England has recently decided against McHenry in what is substantially the same case and on the same issues.

**New York & New England.**—The Massachusetts Railroad Commissioners have recently examined this road, and from their report, dated July 5, the following extract is taken:

"The Commissioners note with pleasure the continued improvement of your road, especially of your bridges. Since the preceding examination electric block signals have been erected from Boston to Readville, on both tracks; the principal switches have been fitted with high and improved targets, and better switches have been put in; train signal semaphores of improved construction are introduced; the construction of the double track is making good progress, and is carried out in a thorough and durable manner; the track on the Woonsocket Division is laid in part with steel rails, and the rolling stock shows marked signs of advance. Since the preceding examination the bridges have all been marked with number boards. Continuing the building of new bridges of a durable character in place of trestles and other old wooden bridges, a few more years will have accomplished a total change for the better in the character of your road in this respect. In previous communications to you the Board has spoken of the need of such work on your road, and you have now effectually responded to the suggestions made."

**New York, New Haven & Hartford.**—Work on the new third and fourth tracks from New Rochelle, N. Y., to Fortchester will be begun in a few days. Between Fortchester and Stamford nothing will be done until the work on the first section is well advanced.

Considerable progress has been made in the work of replacing the gravel ballast on the tracks between New Haven and Hartford with broken stone. The stone is obtained from the quarries near Meriden.

**New York, Ontario & Western.**—A committee of the locomotive engineers of this road last week presented a statement of their grievances to Superintendent Childs. They ask that a day's run be fixed at 100 miles, all made over that distance to be paid for as extra time, at 3½ cents per mile. They also ask for the employment of additional men on the night runs, so that the men on those runs may have more time for sleep. These grievances will probably be adjusted by friendly conference.

**New York, West Shore & Buffalo.**—There is now a complete single track line on this road between Utica, N. Y., and Albany, with the exception of a small gap at Fort Plain, and work is in progress on the second track. Between Utica and Syracuse both tracks are now completed, the last gap having been closed last week. No plans have yet been completed for the stations in Utica, and the site for the passenger station has not yet been decided on. It is now certain that trains will run to Syracuse before the end of the summer. The Gap at Fort Plain was closed July 18, making a continuous track from Weehawken to Syracuse. This company has leased the wharf property at the foot of Thirty-sixth street, in New York, and its principal freight station in the city will be established there. Cars will be ferried over from the Weehawken terminus.

**Northern Pacific.**—The Secretary of the Interior has ordered that this company be notified to complete its selections from the indemnity lands in Wisconsin and Minnesota within three months, in order that the lands included within the indemnity limits may be thrown open to settlement.

The Northern Pacific Express Co. has been organized at St. Paul, Minn., to do an express business over the Northern Pacific road and its branches. The incorporators of the new company are all officers and directors of the railroad company.

It is said that a branch will be built to Grand Harbor, Dak., leaving the main line near the Cheyenne River.

It is reported in New York that a cash dividend will shortly be paid on the preferred stock.

**North Texas & Louisiana.**—This company has filed articles of incorporation to build a railroad from Tyler, Tex., west by north to Gainesville in Cooke County, a distance of about 150 miles. It is intended to be a branch of the Texas & St. Louis road.

**Ohio Central.**—The masonry for the bridge over the Ohio River at Point Pleasant has been completed, and the piers are now ready for the superstructure. J. S. Casement & Co. were the contractors.

**Pennsylvania.**—It is now reported that this company will build the branch from Metuchen, N. J., to Long Branch, for which surveys were made last year, no matter what may be the result of the present litigation with the Philadelphia & Reading over the New York & Long Branch road.

**Philadelphia & Reading.**—The Schuylkill River East Side and the Schuylkill River West Side Companies have been organized to build a branch from this company's main line at Twentieth street in Philadelphia, along the banks of the Schuylkill to Gray's Ferry and a connection with the Chester Branch. This has given rise to a report that the Baltimore & Ohio's new Philadelphia line will be built to Chester, and will enter Philadelphia from that point on the Reading tracks.

This company is trying to secure the right of way for an extension of its Trenton Branch from its present terminus in Trenton, N. J., to a more central point in the city.

**Pittsburgh, Chartiers & Youghiogheny.**—It is reported that a controlling interest in this road has been sold to the Pennsylvania Railroad Co. The road is now completed from Chartiers, near Pittsburgh, to Essen, 12 miles, and has under construction a line from Mansfield east to Latrobe on the Pennsylvania's main line. It could be made a very useful branch to that road.

**Pittsburgh Junction.**—The Pittsburgh Railway Reporter says: "The bids for building the branches of the Junction Railway from Thirty-sixth street to Brilliant station and from Thirty-sixth street to Eleventh street, were opened at the last meeting of the directors, but as they were considered unsatisfactory, the contracts were not let. President Hyndman is satisfied that the Allegheny Valley road will not succeed in shutting out the branches of the Junction, because they are to pass over the Valley road's property."

"The Allegheny Valley people have torn up the Junction's track at Forty-third street and laid their own, the work being done during the nights of last week. They have also filled the Junction track above the crossing with cinders, and are still dumping slag upon it, burying it far under the surface. A dozen cars loaded with cinders are on the Valley siding, so that work cannot be done above it. They have also fished the car out of the river where it was dumped by the Junction upon the opening of hostilities. Special policemen are on the ground every night, in the employ of the Valley Company, to prevent any surprises by the Junction folks."

**Pittsburgh & Park Place.**—This project is for a narrow-gauge suburban line, to run from Bluff street in Pittsburgh to Park Place, in the out-kirts of that city. It will cross all the streets above or below grade, the only street to be occupied being 240 ft. on Bluff street. Application has been made to the City Council for leave to build.

**Pittsburgh & Western.**—This company has begun to build repair shops and a large round-house in Allegheny, Pa. As soon as the buildings are finished the small shops now in use at Zellenople and Parker Mill will be abandoned and the work removed to Allegheny.

**Pontiac, Oxford & Port Austin.**—Track is reported laid on this road from Pontiac, Mich., northward to Oxford, on the Bay City Division of the Michigan Central, a distance of about 15 miles. The first train started from Pontiac last week. The road is to run to Caseville, about 100 miles from Pontiac.

**Richmond & Danville.**—The directors have voted to submit to the stockholders a proposition to increase the capital stock from \$5,000,000 to \$7,000,000. The additional \$2,000,000 will be used to pay off floating debt, and to buy additional equipment for the road.

**Rochester & Ontario Belt.**—Track on this road is now laid from Avenue E in Rochester, N. Y., to the shores of Lake Ontario at Windsor Beach. Intermediate stations have been established at Rifle Range, Kattlesnake Point, and at Rome, Watertown & Ogdensburg crossing. The road will be opened for business July 22. It is about 6 miles long, and will be used at present chiefly for pleasure travel from Rochester to the beach.

**Rochester & Pittsburgh.**—Work is progressing well on the ballasting and finishing up on the Buffalo Division, and it is hoped that regular trains can be put on about Aug. 1. The work in the Buffalo yards is also progressing well.

On the extension from DuBois, Pa., southward to Punxsutawney, 22 miles, the grading is all finished and the bridges up. The track is now all laid and regular trains are expected to run to Punxsutawney in about a week.

**Rutland.**—A statement, signed by six of the directors, has been published, which contains the following:

"It becomes our painful duty to announce to you that the cash account of your late Treasurer, Joel M. Haven, is short to an amount not less than \$38,000—and possibly a larger sum—which can only be determined by a thorough investigation of all the accounts of the company for a series of years, which investigation is now being made by a skillful accountant and nearly completed. It also appears that there has been a large over-issue of stock, at one time amounting, according to the books, to 5,392 shares, but the actual over-issue apparently outstanding is now believed to be 2,391 shares, if spurious shares can be made valid by the surrender of other stock, without action by the corporation. That there was an over-issue was discovered by an examination of the stock books by H. B. Wilbur, at the suggestion, as we understand, of the President. When these irregularities became known to the President, he requested and secured the resignation of Mr. Haven, and Mr. J. H. Williams was appointed Treasurer *pro tem.*, which office he still holds. An attachment has been placed upon the property of Mr. Haven, and it is hoped that, together with his bond,

enough may be secured to save the road from ultimate loss. The examination of the stock books has been thorough and complete, and revealed the fact that your late Treasurer has over-issued both the preferred and common stock from time to time, and to large amounts. One of the latest and most important transactions took place in November last. There was issued at that time to P. W. Clement 3,170 shares of the preferred stock, for which no valid shares were surrendered. These spurious shares, invalid in their origin and issued under very peculiar circumstances, are now in first hands and, as we believe, afford no ground for claim against the corporation; and under advice of its counsel a bill in chancery has been brought against Joel M. Haven, P. W. Clement, Charles Clement, W. C. Clement and John A. Mead, the latter of whom was a party to the sale of the said spurious shares to the Clements, and a temporary injunction obtained restraining them from making any use of the said shares, from transferring them, or bringing suit in regard to them until the Court adjudicates as to the matter. It is intended to faithfully prosecute this suit, and it is believed that upon the evidence the company have, these shares will be canceled and the company suffer no loss therefrom. In every case of over-issue where the signature of Governor Page was used it was a breach of trust on the part of Mr. Haven—the signature being left with him for lawful uses only, as is the custom in large corporations. The board has directed that a new set of stock books be opened, and that future issues be guarded by the countersign of some independent and responsible corporation. We annex a statement from Mr. McLaughlin, the accountant employed by the company, in regard to the stock and cash accounts of the company, showing that no other officer of the company but the late Treasurer is in any way responsible for the irregularities."

**St. Paul, Minneapolis & Manitoba.**—This company gives notice that its line is now completed from Grand Forks to Devil's Lake, Dak., on the north shore of Devil's Lake, from which place steamers run to points on the lake. The company is now prepared to receive freight for the following points, being the shortest and most direct route to the places named: Fort Totten, Bottineau, Brainer, Broken Bone Lake, Chicago City, Coulee Ferry, Creel City, Fresh Water Lake, Grand Harbor, Harrisburg, Irvin or Mauvaise, Jerusalem, Locke, Minnewaukan, Odessa, Rogers, St. John, Stump Lake, Wamuduska and Villard, all in Dakota, and to all points in the Turtle Mountain and Mouse River country. The rate on first-class freight from St. Paul or Minneapolis to Devil's Lake is \$1.35 per 100 pounds. The distance between these points is 414 miles.

**Sandy River.**—The Maine Central Co. has now completed the purchase of all the stock in this company, except the shares held by the town of Strong, and it is probable that they will also be sold in a few days. What the Maine Central will do with the road is not known.

**Shenandoah Valley.**—A traffic contract has already been made with the Pennsylvania Railroad Co., and the Cumberland Valley Railroad Co., for an exchange of business on traffic going to or from points on the Shenandoah Valley road. The Pennsylvania and Cumberland Valley companies also further agree to lay by 20 per cent. of the gross receipts from business with the Shenandoah Valley till Oct. 1, 1885, 15 per cent. for five years succeeding that date, and 10 per cent. for the five years following, for the purchase of the principal of the Shenandoah Valley's general mortgage, at the rate of \$200,000 a year, if the bonds can be purchased at par; otherwise the fund for that year lapses. In any year prior to Oct. 1, 1888, this fund may be applied to the purchase of coupons if the earnings are insufficient to pay interest.

**Somerset.**—At a meeting held July 11, the stockholders of this company voted to surrender possession of the property to the bondholders, so soon as they should be prepared to receive it. The bondholders at the same time took the necessary action to form a corporation, and will take possession as soon as the necessary legal formalities can be completed. The road extends from West Waterville, Me., to Anson, 25 miles; the bonded debt is \$450,000, and no interest has been paid upon it for several years.

**Southern Pacific.**—In the application of this company for the lands granted to the Texas & Pacific Co. for the road from El Paso to Yuma, which has since been built by this company, the Secretary of the Interior announces that he will give no decision until September.

**Spring Hill & Parrsboro.**—This road, which extends from Spring Hill, N. B., on the Intercolonial road, to Parrsboro, 32 miles, with the coal mines at the Parrsboro terminus, has been bought by L. A. Senecal for a syndicate of Montreal capitalists, who propose working the mines extensively.

**Susquehanna & Southwestern.**—This company has filed for record a mortgage upon its projected road to secure an issue of \$4,050,000 in bonds. The line is from Sunbury, Pa., to Hancock, Md., about 135 miles.

**Texas & St. Louis.**—The suit begun against Rust & Coolidge, contractors for the bridge over the Arkansas River, has been transferred to the United States Circuit Court at Little Rock. Under the action already taken, the dispute will not prevent the completion of the bridge.

**Thames River Bridge.**—The public hearing of the Thames Bridge Commission, at New London, Conn., closed on July 12. No further testimony was introduced. The case was argued by Jeremiah Halsey for the respondents, and Governor Waller for the petitioners. Printed briefs, embodying the main points of the argument, were submitted by both sides. The report will probably be made at an early day; it will be submitted to the Secretary of War and the Secretary of the Navy before it is made public.

**Toledo, Ann Arbor & Grand Trunk.**—This company lately offered in London \$800,000 of its first-mortgage bonds, being the balance remaining unsold of the total issue of \$1,260,000. The bonds bear 6 per cent., and have 40 years to run; they were offered at 101. The subscription was to close July 11.

Surveys are being made for a branch or extension from Ann Arbor, Mich., north to St. Louis, about 60 miles.

**Union Pacific.**—This company makes the following statement for May and the five months ending May 31:

	—May—	—1882—	—Five months—	—1882—
Earnings .....	\$2,427,337	\$2,487,920	\$11,082,827	\$11,271,771
Expenses .....	1,238,563	1,222,706	5,929,069	6,042,792
Net earnings .....	\$1,188,774	\$1,265,214	\$5,153,758	\$5,228,979

For the five months there was a decrease of \$188,944, or 1.7 per cent., in gross earnings; a decrease of \$713,723, or 10.7 per cent., in expenses, and an increase of \$524,779, or 11.3 per cent., in net earnings.

Attorney General Johnson, of Kansas, has begun two *quo warranto* suits against the Kansas Pacific and Union Pacific Railroad companies, which were directed to be brought by a concurrent resolution passed by the last Legislature. The suit is to forfeit the franchises of the Kansas road because of a failure to perform certain duties and because of the consolidation with the Union Pacific.